



**SEA AND INLAND
FISHERIES
REPORT FOR
1964**

AN ROINN TALMHAIOCHTA AGUS IASCAIGH
(Department of Agriculture and Fisheries)

FO-ROINN IASCAIGH.
(Fisheries Division)

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REPORT

OF THE MINISTER FOR AGRICULTURE AND FISHERIES

ON THE SEA AND INLAND FISHERIES

FOR THE YEAR
1964

PART I. SEA FISHERIES

The total value of landings of sea-fish in 1964 amounted to £1,505,000 showing an increase of over £90,000 on the figure for 1963. The value of demersal and shellfish landings rose by £47,000 and £66,000 respectively, but, due to a fall in the landings of herrings, the value of the pelagic catch declined by £23,000. Fishing under these three heads is accounted for in more detail in subsequent sections of this report.

The following table gives particulars of the quantity and value of sea-fish landings (excluding shellfish) since 1955.

TABLE 1.

Year	cwt.	£
1964 ..	487,871	1,084,442
1963 ..	399,280	1,059,827
1962 ..	441,149	1,169,201
1961 ..	516,207	1,079,556
1960 ..	688,421	1,271,980
1959 ..	592,319	1,205,971
1958 ..	547,377	1,025,505
1957 ..	532,475	907,119
1956 ..	377,367	787,160
1955 ..	303,519	686,195

Appendix No. 1 contains details of the varieties of sea-fish landed in 1964, and the average value per cwt. for each variety from 1957 onwards is shown in Appendix No. 2.

The usual arrangements were continued during the year permitting imports of white fish, mainly plaice, to meet shortages when supplies from home landings fell short of requirements. Some imports of herrings were also allowed in similar circumstances.

The ports at which the value of landings were highest in 1964 were :—Killybegs, Howth, Castletownbere, Dingle, Galway, Dunmore East and Kilmore Quay. This order differed from that of the previous year in that Killybegs and Howth advanced to first and second position respectively, and Galway to fifth position.

DEMERSAL FISHERY.—The quantity of demersal fish landed in 1964 at 267,155 cwt. showed an improvement of over 27% on the previous year's figure and this increase was reflected in the landings of most varieties, principally haddock, cod, plaice and whiting. Whiting represented about 34% of the total demersal catch and was followed by haddock, cod, plaice and ray in order of quantity of fish landed.

Arising mainly from a fall in the unitary prices realised for most of the demersal species, the total value of the catch at £876,310 did not show an increase proportionate with the rise in quantity over the preceding year. The actual increase amounted to £47,000 or just under 6%. Plaice contributed most to fishermen's earnings, followed by whiting, cod, ray, haddock and soles.

The following table shows quantity, total value and average price per cwt. of demersal fish in the past ten years.

TABLE 2.

Year	Cwt.	£	Average Value per Cwt.	
			s.	d.
1964 ..	267,155	876,310	65	7
1963 ..	210,318	829,367	78	10
1962 ..	230,110	866,547	75	4
1961 ..	212,703	820,911	77	2
1960 ..	233,785	818,828	70	1
1959 ..	258,178	800,698	62	0
1958 ..	258,978	717,306	55	5
1957 ..	259,722	693,330	53	5
1956 ..	225,488	660,674	58	7
1955 ..	193,916	593,190	61	2

PELAGIC FISHERY.—*Herrings* :—Results of the Irish herring fisheries in 1964 were again disappointing, the total catch amounting to 160,929 cwt., as compared with 165,696 cwt. in 1963. Demand was not as keen as in previous years and some 21,939 cwt. were utilised for reduction to fishmeal with the result that the unit price for the overall landings fell to 19/7d. per cwt., as compared with 23/4d. per cwt. in 1963. Apart from landings of about 1,800 cwt. by local boats, the Achill herring fishery failed to give any worthwhile results during 1964.

The 1963/64 herring season at Dunmore East concluded on 8 February, 1964, landings of approximately 47,000 cwt. having been made since 1 January, 1964, by thirty-three boats which took part in the fishing. This quantity represented an increase of approximately 12,000 cwt. on that for the corresponding period of 1963, but this gain was negated by results in the later part of the year. The 1964/65 season opened on 20 November, 1964, more than one month later than in the previous year, and, while fishing up to the end of December was reasonably good, the return for the entire year at 62,237 cwt. showed a marginal decrease on that for 1963. Twenty-four boats participated in the fishery during November and December and, as was the case during the early part of the year, trawling was the only method of fishing used.

The 1963/64 herring season off the Donegal coast came to an end on 23 January, 1964, with landings of some 10,000 cwt., mainly at Killybegs, in the January period. The fishery re-opened in October with some light landings at Burtonport but did not get fully under way until the following month when the shoals were located in Rosbeg Bay and heavy landings were made at Killybegs. Twenty-eight boats, using mainly mid-water trawls, engaged in the Donegal fishery in the 1964/65 season and fishing was carried out over a wide area with the main effort being made off the Stags of Broadhaven, County Mayo, and around Rathlin O'Birne Light, Co. Donegal. The herrings were of good quality, but the export market was not as buoyant as in previous years and substantial quantities were consigned for reduction to fishmeal.

During 1964 herrings valued at £110,000 were exported in fresh, chilled or frozen form to Great Britain, the Netherlands, Czechoslovakia and Germany. In addition, exports to the value of £64,000 were effected in salted or marinated form, principally to the U.S.A., Great Britain and the Netherlands.

The following table shows the quantity, total value and unit value of herrings landed in the past ten years.

TABLE 3.

Year	Cwt.	£	Average Value per cwt.	
			s.	d.
1964	160,929	155,440	19	4
1963	165,696	196,068	23	8
1962	197,534	260,463	27	9
1961	250,078	209,710	16	9
1960	417,414	394,945	18	11
1959	308,064	364,130	23	8
1958	252,759	268,579	21	3
1957	233,365	173,027	14	10
1956	137,849	101,608	14	9
1955	96,560	73,782	15	3

Sprats :—The revival of sprat fishing which was evidenced in 1963 continued at an expanded rate in 1964, when landings amounting to some 33,000 cwt. valued at over £14,000 were recorded. These figures compare very favourably with the return for 1963, when landings of 8,000 cwt. valued at £3,500 were made. The landings were mainly effected by boats operating from Clogherhead and the bulk of the catch was utilised for fishmeal production and for feeding material for trout farms.

Mackerel :—An expansion of the mackerel fishery was also achieved in 1964 when the total catch, amounting to over 26,000 cwt., was valued at £39,000 in comparison with landings of 15,000 cwt. valued at £34,000 in 1963. Killybegs, Kinsale, Castle-townbere and Union Hall were the principal landing places.

Statistics of mackerel landings over the past ten years are given in the following table.

TABLE 4.

Year	Cwt.	£	Average Value per cwt.	
			s.	d.
1964	26,308	38,891	29	7
1963	14,980	33,753	45	1
1962	16,475	39,297	47	5
1961	24,007	38,238	31	10
1960	37,125	58,144	31	4
1959	25,645	40,978	31	11
1958	35,490	39,570	22	4
1957	22,913	36,209	31	7
1956	13,850	24,815	35	10
1955	11,563	18,913	32	9

SHELLFISH.—The upward trend in the value of shellfish landings recorded in 1962 and 1963 was well maintained during 1964, when the value of the catch reached the record total of £420,114, as compared with £353,863 in the previous year. The most notable increase was in the catch of lobsters, the value of which rose to £162,000 as compared with £106,000 in 1963. The return from landings of crawfish at £69,000, also showed considerable improvement on the 1963 figure of £49,000. Lesser increases were recorded in the value of the catch of the other shellfish species, with the exception of Dublin Bay prawns and mussels. The decline in the value of landings of prawns from £101,000 in 1963 to £80,000 was due to a considerable drop in the east coast landings. By way of compensation, however, for the decline in these landings, encouraging results were shown in the development of new prawn fisheries off the west and north coasts where the value of the landings amounted to £7,000. The fall in the value of the mussel catch from £9,291 to £7,913, despite a marginal increase in quantity, was accounted for by a deterioration in the quality of the meats arising from the fact that water temperatures generally were below that most suitable for providing the best fattening conditions. As in previous years a scheme of mussel transplantation was again carried out at Cromane during 1964. Other features in the shellfish sector included the emergence of a small oyster fishery on Lough Foyle, which produced oysters of good quality, the commencement of regular fishing for whelks in the Carlingford Lough area, and the further expansion of fishing for palourdes and sea-urchins.

EXPORTS.—At £1,948,031 in 1964 the value of fish exports—including both sea fish products (£862,162) and freshwater fish products (£1,085,869) (see Part II of this Report)—was the highest on record, being £228,989 higher than that for 1963, which itself had constituted a record. Details of the exports are shown in Appendix No. 4.

PERSONNEL AND VESSELS.—The total number of men engaged full-time in sea fishing was 1,650—almost the same figure as in 1963. A slight reduction from 3,922 in 1963 to 3,841 was recorded in the number of part-time fishermen, due mainly to the withdrawal from fishing of a number of part-time fishing boats in the small boat category (viz. those propelled by oars, sails or out-board engines).

The number of larger motor vessels of 25 gross tons and over, which account for the vast bulk of the sea-fish catch, engaged in fishing in 1964 was 176, or 5 more than in 1963. The number of boats added to the fleet in this category by way of new issues, purchases of second-hand boats abroad and re-issues of boats previously resumed and temporarily laid-up was more than sufficient to offset losses during the year. The trend, noted in previous years, towards increasing purchases of big vessels in the 50 gross tons and over range was not so marked in 1964, the number of vessels in this category having increased by 1 to 23.

TRAINING OF FISHERMEN.—The schemes for training fishermen as skippers and boys as fishermen were continued during 1964.

To be eligible for admission under the scheme for training fishermen as skippers, applicants must be at least twenty years of age and have three years sea-fishing experience. Training lasts for a maximum period of twenty-eight weeks—twelve weeks devoted to a practical course on selected fishing boats and sixteen weeks to a theoretical course at the Town of Galway Vocational School. The duration of the practical course depends on the experience of the individual trainee. Substantial allowances are payable during the training period. Eleven fishermen were selected for training in 1964 and nine of them were successful in the examination for a Certificate of Competency. In addition to the course at Galway, two skippers who attended the Irish Nautical College, Dun Laoghaire under a special scheme, also obtained Certificates of Competency. To date fifty-one fishermen have obtained certificates following attendance at training courses.

Under the scheme for training boys as fishermen, applicants must be at least sixteen years of age; previous sea fishing experience is not necessary. Boys are assigned to selected fishing boats and allowances are payable to them for a period not exceeding two years. At the beginning of 1964 sixty-five boys were in training and fifty-four others commenced during the year. Of this total of one hundred and nineteen, twenty-seven became full crew members and their weekly allowances ceased accordingly. Thirty-eight discontinued training during 1964; the remaining fifty-four were still in training at the end of 1964. Since the commencement of the scheme in 1959, sixty-four trainees have qualified as deck hands.

With the co-operation of the Department of Defence, the County Cork Vocational Education Committee and An Bord Iascaigh Mhara, residential courses for boy trainees were held at the Naval Base, Haulbowline, County Cork. Instruction in elementary navigation, seamanship (including boat work), rope work, rigging, ship board duties, ship maintenance, first-aid, hygiene and physical training is provided by the Department of Defence; in net mending by An Bord Iascaigh Mhara; and in simple mathematics, cookery, manual work (metal and wood), simple book-keeping, Irish and English by the County Cork Vocational Education Committee.

Two residential courses each of ten weeks duration were held in 1964, and thirty-four trainees attended them.

AN BORD IASCAIGH MHARA.—During the year 1963/64 the Board received from the Fisheries Vote a grant of £200,000 in aid of

administration and general development. Repayable advances totalling £236,000 were also made to the Board from the Central Fund for financing the purchase of boats and gear.

The Board's gradual withdrawal from direct fish trading activities was completed in 1963/64 with the disposal of their interests at Cork, Dublin, Killybegs and Limerick to fishermen's co-operatives and private concerns, and the Board's role became primarily that of a development authority. The Board's newly-formed Market Development and Advisory Services Divisions, set up to promote increased sales of fish at home and abroad and to improve the productivity of the fishing fleet respectively, came into full operation.

During the year ended 31 March, 1964, the Board issued 23 new boats (sixteen of 26', one of 35', four of 32' and two of 56') valued at £63,911, and provided £70,552 to finance the purchase of second-hand boats ranging from 50' to 72' in length. The number of motor fishing vessels on hire purchase at the end of the year was 160 valued at £1,090,122 at time of issue.

The fish processing factories at Galway and Killybegs were re-organised during the year as development units for the processing section of the industry. In addition to the production of processed fish on a contractual basis on behalf of private interests, experimental work was carried out on the development of new sea-food products based on Irish raw material. No processing was undertaken at the Board's other factory at Schull, because of continued inadequacy of supplies for economic working at that centre. The losses incurred on the factories amounted to £11,175 in 1963/64, compared with £26,075 in 1962/63.

A major campaign aimed at increasing domestic sales of fish through improved quality, better distribution and intensive promotion was launched by the Board during the year with initial satisfactory results. Complementary development effort in the export field assisted in increased exports to a number of countries.

Arrangements for the supply of ice to fishermen at a number of fishing ports were preserved but, despite the continuance of a State grant enabling the price to fishermen to be kept at a reasonable level, sales of ice remained low.

Production in the Board's boatyards at Baltimore, Dingle, Killybegs and Meevagh increased in value from £104,723 in 1962/63 to £108,391 in 1963/64, and included work on the development of the 65 ft. prototype boat designed and built by the Board. There was, however, an operational loss in 1963/64 which at £9,264 was £7,157 higher than in the preceding year. Additionally to these direct operations, the Board contracted with some private boat-builders for the supply of a number of lobstering boats to meet the growing demand for such craft, particularly on the west coast, which the Board have engendered.

SEA FISHERIES PROTECTION.—The Naval Service of the Department of Defence continued their patrols of the exclusive fishery limits throughout 1964, and two vessels of extern registration were arrested for infringing these limits. A conviction was obtained in one case and a fine imposed. In the other instance the case was

dismissed on a technicality. The assistance of the Garda Síochána was as usual available in these cases and in the enforcement of fishery protection measures generally.

MARINE WORKS.—Under the programme of major fishery harbour schemes, development works were commenced at Killybegs and Castletownbere, while throughout the year progress was maintained with the work at Dunmore East. Site investigations and other preparatory works for similar projects at Galway and Howth were completed. Legislation was being drafted to confer powers for the compulsory acquisition of property required for these projects and to provide for the control and management of the major fishery harbours when completed.

Marine works were completed at Crookhaven (McCarthy's Quay), Garnish and Gerahies (Co. Cork), Passage East Harbour (Co. Waterford), Ballynacarta (Co. Donegal), Clogherhead (Co. Louth), Straid (Letternullen, Co. Galway), Enniscrone (Co. Sligo). Works in progress at the end of the year included deepening and improving the harbour at Greencastle (Co. Donegal), improvement of slipways, pier and construction of breakwaters at Gola Island and Gortnasate (Co. Donegal) and general improvement of landing facilities at Stackamore (Arranmore Island, Co. Donegal).

Improvement schemes were authorised and State grants offered to and accepted by the Local Authorities in respect of Caherciveen and Renard Point harbours, Co. Kerry, and Kilmore Quay harbour, Co. Wexford.

EXPLORATORY VESSEL.—*Cú Feasa*.—Fourteen voyages were made during the year by the Department's vessel *Cú Feasa* on fishery investigations relating to whiting, plaice and prawns. Work on the latter species included a combined operation in the Irish Sea in association with a British fisheries research vessel and a further survey of potential fishing grounds off the south coast. An account of the investigations in which the vessel is engaged is published separately in the Department's Sea Fisheries Bulletin.

Exploratory surveys of the sea bed with the object of locating and charting suitable trawling grounds were undertaken off the County Kerry coast and in the Irish Sea. The findings were conveyed to local fishermen.

The *Cú Feasa* also assisted fishermen in locating herring shoals off the south-east coast and sprat off the east coast.

Work on the construction of a second exploratory and research vessel continued and she is expected to be commissioned before the end of 1965.

SCIENTIFIC INVESTIGATIONS.—In accordance with arrangements made earlier, details of scientific investigations into sea fisheries have already been described in the *Sea Fisheries Bulletin* No. 2, issued earlier in 1965. Work was continued during 1964 on the herring fishery at Dunmore East and in Donegal. Two joint papers by officers of the Department and scientific workers from the Lowestoft Laboratory of the Ministry of Agriculture, Fisheries and Food for

England and Wales, were prepared during 1964 for ultimate publication in the *Journal du Conseil*. Reports on the Dunmore East and Donegal herring fisheries were circulated to the trade during the year. The fat contents of herrings from selected areas were investigated during the year and the results were also circulated to interested parties.

Investigations on mackerel taken as a by-catch in the Castletownbere trawl fishery were continued until the middle of the summer. It then became obvious that the results could have little statistical significance and it was decided to abandon mackerel investigations until a definite fishery for this species was established.

Investigations into the sprat and sand eel stocks were started in the period under review.

Whiting investigations around the Irish coasts were continued throughout the year, particularly in relation to the stocks in the Irish Sea. Stock surveys were made in July at the 10 stations worked by the *Cú Feasa* previously, with a view to obtaining an index of abundance of all age groups of whiting in the Irish Sea. A preliminary survey for eggs and larvae of the whiting was commenced but had to be abandoned because of the breakdown of the equipment. A small number of whiting were also tagged in July, but, owing to small supplies of fish satisfactory for tagging being available, the programme was abandoned for the time being. Market samples of whiting from east coast ports were examined for age, growth, etc. and intensive sampling of whiting at Dingle and Killybegs was also undertaken, as samples from these areas taken in the Dublin market proved to be unsuitable. A study of the catch and effort was undertaken from selected ports in the second half of the year.

Plaice tagging was carried on from the *Cú Feasa* during the year off Dundrum Bay, Courtown Bay and Rosslare. About 2,400 plaice were tagged and recoveries up to 31st December, 1964, numbered 677 (28.4%). A few long distance migrations were recorded. Because of practical difficulties of carrying out adequate stock sampling on the market, a system of sampling at sea was commenced in October, 1964, when fish were examined for length, age, sex and maturity. A pilot scheme for the collection of catch/effort data was commenced at Howth in November, 1964.

Investigations in Dublin Bay and Waterford Harbour were started during the year, in order to obtain background information as to the stocks of fish there in relation to existing bye-laws controlling fishing in these areas.

Specimens of fish were as usual identified for the Irish Specimen Fish Committee and members of the public. Some interesting fish, rare and scarce in Irish waters, were recorded during the year. One specimen of the bogue (*Box boops*) from Dingle Bay was recorded in January, 1964, and it was only the second to be recorded from Irish waters heretofore. Other interesting fish included three specimens of the six-gilled sharks (*Hexanchus griseus*) of which only four previous specimens have been recorded, from Dingle and Union Hall, Co. Cork; the record rod-caught white skate (*Raia marginata*) weighing 146 lb. 14 oz. from Galway Bay; three specimens of the boar-fish (*Capros aper*); two red-band or red-snake fish (*Cepola rubescens*); four

black-mouthed dogfish (*Pristiurus melastomus*), and one *Scorpaena dactyloptera*.

A report by the Inspector of Fisheries and Scientific Adviser on the occurrences of rare or scarce fish in Irish waters during 1964 was accepted for publication in the *Irish Naturalists' Journal*.

The first phase of research on lobsters was completed during 1964 and a scientific paper on the results by the Inspector of Fisheries (Sea Fisheries) was almost completed at the close of the period under review. The second phase of this work, including confirmation of the estimates of growth rates, determination of the maximum sustainable yield for existing fisheries, and development of research into fishing gear was commenced at the end of the period under review.

Owing to the scarcity of crawfish (*Palinurus vulgaris*), the tagging programme arranged for the spring of 1964 had to be abandoned. No further progress was made in relation to investigations on crabs.

A paper on the Dublin Bay prawn (*Nephrops norvegicus*) based on material collected in previous years, was published by a former member of the scientific staff of the Department in the *Scientific Proceedings of the Royal Dublin Society*.

Considerable attention was devoted during 1964 to the Tralee Bay oyster fisheries. Small oysters transplanted from unsuitable to suitable areas improved greatly in size. The spatfall in 1964 in Tralee Bay was judged to be light. In Clarenbridge the oyster spatfall was found to be negligible. Oysters from the newly revived fishery in Lough Foyle were also examined towards the close of the year under review. Advice was given to owners of private beds during the year and a number of areas, where oyster development was further advanced were examined by the staff of the Department.

The stocks of mussels at Cromane, Co. Kerry, and at the estuary of the River Boyne were kept under review during the year. Particular attention was paid to the condition of the mussels and to the results of natural spawning in the stocks. The changes in quality of mussels as a result of transplantation at Cromane, Co. Kerry, were also investigated.

Investigations on scallops were recommenced in 1964 to determine the growth and mortality rates with a view to obtaining background information on the stocks of these molluscs in Irish waters.

INTERNATIONAL AND OTHER CONFERENCES.

(1) INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA.—The Department's Inspector of Fisheries and Scientific Adviser, the Inspector concerned with sea fisheries and a representative of the Salmon Research Trust of Ireland, Inc., were present at the annual meeting of the International Council held in Copenhagen from 28th September to 7th October. Officers of this Department and of the Trust contributed papers to the Scombriform and Salmon and Trout Committees. The Department's Inspector of Fisheries and Scientific Adviser was re-elected First Vice-President and Chairman of the Salmon and Trout Committee. This Council was originally established in 1902 by an exchange of letters between participating Governments.

In September, 1964, Ireland was represented by the Legal Adviser to the Department of External Affairs and the Department's Inspector of Fisheries and Scientific Adviser at a conference called by the Danish Government in Copenhagen for the purpose of concluding a Convention governing the affairs of the Council. A Convention was signed on behalf of Ireland by this country's two representatives.

(2) **NORTH-EAST ATLANTIC FISHERIES COMMISSION.**—This Commission was established under the provisions of the International Fisheries Convention of London of 1959 to regulate the fisheries in the North Atlantic region. The annual meeting of the Commission in The Hague in the Netherlands in May was attended by this country's two Commissioners—the Assistant Secretary in charge of the Fisheries Division and the Department's Inspector and Scientific Adviser. The Assistant Secretary, the Inspector of Fisheries and Scientific Adviser and two other members of the Scientific staff also attended a meeting in London in December for the purpose of preparing a joint submission to the Commission at its next meeting in Moscow on the question of mesh sizes for whiting and nephrops in the Irish Sea.

(3) **FISHING BOAT CONFERENCE.**—The Inspector and Engineer attended a conference on the design of wooden fishing vessels held at Copenhagen in September, 1964, under the joint auspices of the Danish Wood Council and FAO.

(4) **ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT.**—The Department continued to co-operate in the work of the Fisheries Committee of this Organisation and was represented at meetings held in Paris in February, June and December, 1964. During the year the Committee undertook an examination of the various price systems in member countries as well as a study of the general services rendered to their fishing industries by the member States. Of particular interest to this country was a report on the European market for herrings which was prepared by a consultant engaged by the Fisheries Committee.

An assistant engineer attended a meeting on fish technology held in Scheveningen, Netherlands, in September, 1964, under the auspices of OECD.

ENGINEERING AND TECHNOLOGY.—Surveys were carried out on board *Cú Feasa* of prospective fishing areas off the Kerry coast between Inishtearagh and Kerry Head. Charts of the survey were prepared and the information collected was conveyed to fishermen operating in the area.

Close co-operation continued with the biological staff in the investigation of fish stocks off the East and South coasts. A search pattern was designed and executed off the South-East coast for the purpose of locating herring shoals and the fishing fleet was kept advised as to the position.

Maps, charts and diagrams covering various aspects of sea fisheries were prepared for the assistance of the American Survey Team who reported on Sea Fisheries.

Arrangements for the equipment of the second research vessel under construction were examined and advised upon, as were also

proposals for modifications and replacements of existing equipment and gear on *Cù Feasa*.

Work was put in hands on the development of an electrical device for measuring the freshness of fish.

Bulk consignments of fish held in cold storage for export were examined.

LEGISLATION.—Particulars of Statutory Instruments relating to sea fisheries made during the year are included in Appendix No. 22.

PART II.

INLAND FISHERIES

In 1964 the total catch of salmon by all methods amounted to 3,012,664 lb. valued at £789,318, compared with 2,836,640 lb. valued at £703,217 for 1963. The catch for 1962 was also very good so that for three successive years the salmon returns have been exceedingly high, due, in the main, to the very successful runs of grilse, i.e. those fish which have spent less than two full years feeding in the sea. The catch of sea trout at 105,689 lb. valued at £17,251 was much higher than that for 1963, when the weight and value were 91,681 lb. and £15,231, respectively. Details of the catch of salmon and sea trout taken in the years 1962 to 1964 inclusive are given in Appendix No. 11. As in previous reports for the years since 1951 details of the catch in the Moville Area of the Foyle Fisheries Commission, i.e. the former Moville Fishery District, are not included in Appendix No. 11, but they are given in that part of this report relating to the Commission.

In general the runs of spring fish appear to have been better than in the previous year and again a fair number of large spring fish (i.e. fish which have spent three years feeding in the sea) were taken. Small summer fish which form the mainstay of the runs of salmon in May and early June were again fairly abundant and substantial runs of grilse for the third year in succession entered Irish rivers from the middle of June onwards. Grilse continued to run up to October in many rivers.

Conditions for angling were reasonably favourable throughout most parts of the country and generally there were satisfactory escapements of fish into fresh water. Despite the attractive running water which had the effect of enticing fish into the fresh water portion of most rivers, the height of water was not such as to unduly impede netting operations. In view of the good running conditions for salmon throughout most of the country the runs of fish, and particularly of grilse, in 1964 must have been heavy—probably better than those of 1962 and 1963. The spawning season was reported to be exceedingly good in most districts.

Mortality in young salmon from the time they leave the rivers is very high. Even a small change in mortality rate has a very marked effect on the ultimate return to the river. It would appear that in relation to the grilse runs of the years 1962 to 1964, inclusive, the mortality rate between the run of smolts to the sea and the subsequent return of the grilse to fresh water must have been lower than that prevailing for some years previously.

Details of the catch in each fishery district for the years 1962 to 1964 inclusive are given in Appendix No. 12. In 1964 the catch of salmon by weight was distributed as follows :—

Draft nets	..	..	..	..	49.7%
Drift nets	..	..	..	..	25.3%
Rod and line	..	..	..	..	12.9%
Stake nets and other methods	..	..	..	..	12.1%

There was a rise in the proportion of fish taken in drift nets from 24.2% in 1963 to 25.3% in 1964. There was also a slight rise in the proportion of rod caught fish from 12.1% in 1963 to 12.9% in 1964, which was associated with fairly satisfactory angling conditions throughout the country. The average weight of fish taken on rod and line was 7.4 lb. compared with 8.2 lb. for 1963.

A sharp rise in the number of rod licences took place in 1964, when a total of 11,628 of all kinds were issued, compared with 9,745 for 1963 and 9,009 for 1962. The average catch per rod throughout the country was 4.5 fish weighing 33.5 lb. and valued at £10.9.4 compared with 4.1 fish weighing 35 lb. and valued at £10.7.4 for 1963. As for many years past, the highest average weight (12.8 lb.) of rod caught fish was for the Drogheda District, in which angling virtually ceases well before the grilse run starts at the end of May and the catches include a fair proportion of the earlier running large spring fish (i.e. salmon which have spent three full years feeding in the sea). In the western districts of Galway, Connemara, Ballinakill, Bangor and Ballina the average weight, as usual, was relatively low because the rod catches here are mainly of grilse.

The sea trout catch which, as mentioned earlier, was well above that for 1963 and amounted to 105,689 lb. was distributed as follows :—

Rod and line ..	**	**	**	68.1%
Draft nets ..	**	**	**	28.1%
Drift nets ..	**	**	**	1.1%
Other commercial methods ..	**	**		2.7%

Although there was a very slight fall in the proportion of fish taken on rod and line in 1964, the actual weight taken by this method showed a marked increase over that of 1963 (see Appendix No. 11).

The average catch of sea trout per licence for the various districts is of very little value in assessing the sea trout potentiality because it is not known for some areas what proportion of the anglers are actually seeking sea trout rather than salmon. In the leading sea trout angling area (the Connemara District) the average catch per licence was 18.6 fish weighing 19.4 lb.

The open sea drift net fishery for salmon originally established in the sixties of last century, carried on from small boats from landing places in Donegal, Sligo and Mayo provided satisfactory results in 1964, and in some cases the season again extended into August. The average weight of fish landed was 7.0 lb., a very high figure, not reached in the previous ten years, the increase being due to the fact that the average weight of the grilse in 1964 was high for that class of fish.

Reports from the Boards of Conservators indicated a fairly good run of smolts to the sea in 1964. Outbreaks of disease during the year were, with the exception of one Fishery District, few in number. Heavy mortality in the spawning males did occur, however, in some districts, but this cannot be regarded as excessive in relation to the heavy spawning stocks in most areas. In the Waterville River in the Kerry District heavy mortality was experienced mainly in salmon at

the end of the season and at the close of the period under review investigations were in progress to identify the cause of the mortality.

Officers of the Department in accordance with a long established practice paid visits to some of the main marketing centres in Great Britain for Irish salmon. The Department gratefully acknowledges the assistance and co-operation of the Fishmonger's Company, London, and of the various market authorities, particularly in Manchester, and of the salmon merchants in the various centres.

In 1964 the Corporation of Dublin Wholesale Fish Market handled 111,866 salmon and grilse, weighing 782,226 lb., compared with 104,475 fish weighing 776,381 lb. and 131,215 fish weighing 934,788 lb. for 1963 and 1962 respectively.

BOARDS OF CONSERVATORS.—Details of receipts and expenditure of Boards of Conservators in 1964 are given in Appendix No. 18 of this Report.

EMPLOYMENT IN THE INDUSTRY.—Exclusive of persons employed in the marketing and transport of fish, a total of approximately 5,700 persons found either whole-time or part-time employment in inland fisheries during the year. The figure included approximately 3,588 persons engaged in netting for salmon under common law right, 614 employed by Boards of Conservators on protection of fisheries over the open and close season, 750 engaged in netting in the Foyle Area or employed in that area as ghillies or on protection work, 101 engaged in development work on behalf of the Inland Fisheries Trust and the remainder employed by proprietors of commercial salmon fisheries, by fishery owners or by angling associations.

INSTRUMENTS OF CAPTURE.—The total number of fishing licences of all kinds issued during the year was 13,598, representing an increase of 2,255 on the figure for 1963. The totals in recent years were :—

1963	..	11,343
1962	..	10,479
1961	..	9,980
1960	..	10,059
1959	..	9,165
1958	..	11,053

The numbers of the various classes of licences issued in each fishery district during the year and the rates of licence duty are given in Appendices Nos. 19 and 20 respectively.

OFFENCES AGAINST THE FISHERY LAWS.—The number of prosecutions during 1964 was 266, as compared with 251 in 1963. The Garda Síochána continued to co-operate with Boards of Conservators in the protection of inland fisheries during the year.

SALMON EXPORTS.—In 1964 the value of salmon exports was the highest on record and exceeded by £75,774 the corresponding figure for 1963, which itself had constituted a record. Details for the two years were as follows :—

	1964		1963	
	cwt.	£	cwt.	£
Fresh, chilled and frozen salmon	22,642	901,652	23,477	832,458
Smoked salmon	284	31,520	225	24,940

Of the total quantity exported in fresh, chilled or frozen forms, 19,231 cwt. went to Great Britain and the Six Counties and 2,191 cwt. to France ; the bulk of the smoked salmon went to Great Britain. The average export price for the fresh, chilled or frozen exports was £39 16s. 5d. per cwt. as compared with £35 9s. 2d. per cwt. in 1963. These figures include landings of salmon in Co. Donegal from waters in the area administered by the Foyle Fisheries Commission.

The number of salmon exporters licensed under the Agricultural and Fishery Products (Regulation of Export) Act, 1947 (Export of Salmon) Order, 1954 (S.I. No. 275 of 1954) was 91.

DEVELOPMENT OF EEL FISHING.—During the year thirty-four eel fishing authorisations were issued.

In 1964 6,512 cwt. of eels valued at £91,896 were exported as compared with 3,125 cwt. valued at £45,313 in 1963 and 2,038 cwt. valued at £33,772 in 1962.

Engineering advice on the construction of eel trapping devices and fittings, and also as to the storage and processing of eels including modern methods of wrapping and packaging, was tendered to interested parties.

Experiments in the capture of eels in River estuaries made satisfactory progress.

FISH CULTURE.—A further demonstration fish farm—a double unit—commenced operations at Kilmaglish, Mullingar, County Westmeath, in 1964. The demonstration units at Aherlow (County Tipperary) and Athenry (County Galway) and the two private units near Thomastown (County Kilkenny) and Holycross (County Tipperary) continued to operate successfully. The units at Aherlow and Thomastown were extended. Information was furnished to persons interested in small scale fish farming and a number of sites were inspected.

The commercial fish farms near Waterville, County Kerry and Woodenbridge, County Wicklow, were operated to capacity, while operations were extended at another commercial unit near Dingle, County Kerry.

Production of rainbow trout during the year increased and 3,092 cwt. valued at £60,921 were exported. The corresponding figures for 1963 were 1,362 cwt. valued at £25,739.

ARTIFICIAL PROPAGATION.—Details of salmon, sea-trout and brown trout ova produced at the various hatcheries are given in Appendix No. 23.

The output of salmon ova in the 1964 spawning season amounted to 5,106,000 as compared with 4,896,000 produced in the previous season. 818,000 salmon ova were distributed from the Department's hatcheries at Glenties, Co. Donegal, and the State-assisted hatchery at Lismore, Co. Waterford. 28,000 sea trout ova from Glenties were supplied to the Inland Fisheries Trust. The Trust released over 1,000,000 brown trout fry, summerlings and yearlings and 279,000 rainbow trout fry and fingerlings in selected waters. In addition, 50,000 salmon fry and 16,000 sea-trout fry were stocked in waters which were improved by the Trust. 165,000 brown trout, almost half of which were fry and fingerlings, were sold to angling associations, and 50,000 rainbow trout fingerlings and 500,000 rainbow trout ova were sold to fish farmers.

REGULATION OF ERNE SALMON FISHERY.—Salmon fishing by commercial methods was again prohibited in 1964 as in the four previous years until an escapement of 3,000 fish had been recorded on the counter operated by the Electricity Supply Board at Cathleen's Fall dam. Fishing opened on 6th July and 11 draft net licences were taken out. The special local licence for these nets was fixed at £15.

The total recorded run of fish up to 31st October, 1964, was 11,076, of which 2,023 were taken by nets and 735 in the traps operated by the Electricity Supply Board.

The increased run of fish in the river would seem to indicate that curtailment of fishing in recent years is bringing about the desired improvement in stocks.

SCIENTIFIC INVESTIGATIONS.—Fuller details of the progress of the scientific investigations conducted by the staff of the Department have already been given in *The Inland Fisheries Bulletin*, No. 2, issued earlier.

During 1964 considerable attention was given to the investigation of predation by pike on the smolt population of the River Lee and it was shown that in the month of April nearly 9% of the pike, which contained food, taken in the Lee reservoirs, had salmon smolts in their stomachs.

Work was continued on the effect of drainage works on the River Moy on the stocks of contained fish, and preparations were made for observations of the effects on the trout population of the lowering of the level of Lough Conn. Some work was also done on the mortality resulting from the deposit of silt on spawning beds as a result of dredging operations.

Further work was done during 1964 on the estimation of fish stocks by poisoning methods. One lake in County Donegal and another in County Monaghan were investigated. In the latter case the standing crop was estimated to be of a similar order to that obtained in previous investigations.

Tagging of salmon in the open sea off the north coast of County Mayo was continued, thus completing the series of experiments started there earlier. Altogether 72 recoveries were made from 533 taggings. Whilst the majority of the fish were recovered fairly close to the tagging station, a proportion were recovered over 200 miles away, the most notable recoveries being from Sweden, Scotland and two places in Wales. A total of 2,185 salmon kelts and 100 sea trout kelts were tagged in 1964 at various hatcheries, etc., other than those operated by the Salmon Research Trust of Ireland Inc. Forty-eight recaptures of clean salmon and six of clean sea trout were reported, partly from the 1964 taggings and partly from those of previous years. Two fish tagged as ripening fish in Carrowmore Lake in September, 1963, were retaken in October, 1964, off the west coast of Greenland. Officers of the Department also took part in tagging operations on behalf of the Foyle Fisheries Commission and collaborated with an officer of the Ministry of Agriculture, Drainage and Fisheries Division, Belfast, in the compilation of a report for publication in the Annual Report of that body.

During 1964 considerable attention was again given to the River Erne. The daily catches were recorded, from 6th July when commercial netting opened, and correlated with the variations in the tides. A sample of each day's catch was weighed and measured and scales were taken for age determination. Scale material was also collected from the Rivers Shannon, Moy and Corrib. A survey of the salmon stocks of the River Shannon from the years 1957 to 1962 was completed in the period under review. A review of the Irish salmon investigations up to 1963 by the Department's Inspector of Fisheries and Scientific Adviser was published in the *Scientific Proceedings of the Royal Dublin Society*. A review of the scientific work done in relation to the salmon of the River Foyle by the same officer was printed as a special paper by the Foyle Fisheries Commission.

Further progress was made in the investigations into the biology of the pike. A newly appointed Assistant Inspector of Fisheries commenced to investigate the age and growth of pike on the basis of the extensive material collected heretofore.

Large numbers of char (*Salvelinus colii*) from Lough Conn were examined. It now seems that the stocks of these fish in this lake are much heavier than was expected up to now.

Experimental fishing for eels was continued in the estuaries of certain rivers by means of fyke nets and some observations on the biology of eels were made during the year. Age determinations of eels from selected areas were made and the fish were found to range from six to ten years of age.

A bursary was awarded to a Zoology student who over a period of twelve weeks carried out investigations into the occurrence of rainbow trout in Lough Currane, Waterville, Co. Kerry, following escape from a fish farm. Only sixteen rainbow trout were captured in the lake during the period, and examination of the stomach contents indicated that the fish were feeding exclusively on invertebrates.

The study of a kidney disease found in rainbow trout reared in a fish farm was undertaken during the year. The indications at the

time of writing are that the disease is caused either by unsatisfactory environment or deficiencies in feeding rather than by an infectious agent.

During the year a statistical review of the Irish salmon industry was undertaken by one of the Department's staff, and arrangements were made for its publication at the close of the period under review.

The staff of the Department continued to read scales and identify fish sent for identification. The Department acts as a clearing house in this respect for the Irish Specimen Fish Committee. Assistance is also given to the Boards of Conservators in the preparation of cases for the Courts when expert evidence is needed.

An officer of the Department completed a survey of the methods used for the capture of salmon down the ages and this was subsequently published in the *Proceedings of the Royal Irish Academy*.

For a long period up to the end of 1964 scientific reports by officers of the Department have been published in the Journals of many learned societies. During the period under review it was decided to re-establish a scientific journal, as a medium for the publication of the majority of scientific papers by the Department's staff, under the general title of *Irish Fisheries Investigations*, of which Series A. will relate to the fresh water and Series B. to marine investigations. Four papers for the first issue of *Irish Fisheries Investigations, Series A*, were completed at the close of the period under review, and arrangements were made for their printing at an early date.

ENGINEERING.—Electrical Power Stations :—Investigations continued into the factors likely to influence the movement of smolts past the hydro-electric dams in the River Lee, and following study of the data obtained, a programme was prepared to expedite downstream migration of smolts during the coming year, 1965. A team of engineering undergraduates employed on a studentship basis made a survey of the spawning and nursery areas in the tributary streams of the reservoirs to determine their maximum potential; fish surplus to that potential to be transferred to less congested waters upstream of the reservoirs.

It did not prove possible to carry out as planned the programme of artificial freshets in the River Liffey, but the few observations that were carried out indicated that the arrangement could be beneficial and it was agreed that the scheme be continued in future years.

Difficulties were experienced in the installation and operation of the fish counting arrangement intended for the fish pass at Cliff dam on the River Erne. It is hoped they will have been overcome and that a start can be made on recording during 1965.

The thermal power stations under construction at Great Island in the River Barrow and that projected at Tarbert on the River Shannon were the subject of continued discussion with the Electricity Supply Board to ensure that the fisheries in those two river systems would be unaffected by the cooling water arrangements of the stations.

Arterial Drainage :—The arterial drainage works being carried out by the Office of Public Works on the Rivers Moy,

Inny, Broadmeadow, Deel and Killimor, and intermediate drainage schemes being executed by public works contractors in the Rivers Duff, Abbey and Swilly were kept under constant observation in the fishery interest. To the extent practicable spawning areas, holding pools and angling stretches were preserved and provision was made for the free passage of fish at weirs and other obstructions.

The Office of Public Works notified their intention of undertaking four new intermediate schemes: arrangements were made to collect the data necessary to enable fishery interests to be suitably protected. Surveys were commenced also of the fishery interests in two further major rivers in which the Office of Public Works propose to undertake drainage works.

Investigation of fish movement :—The three electronic fish counters at Ennistymon, Galway and Ballina did not operate satisfactorily at all times during the year. The faults were, in general, due to factors extraneous to the electronic instruments themselves. At all three places steps were taken to put matters right. At Ennistymon the instrument was modified to operate from a car accumulator fed from public electricity supply through a trickle charger. Arrangements were made to replace the temporary experimental counting tunnel with one of a new design. At Galway where an electrode had been cracked as the result of exceptional flood flows there was under-counting until the fault was detected. The maximum number of fish recorded as having passed in any one month was 259 in July. The second largest monthly run recorded was 138 in January. At Ballina in the period 18th October to 25th December, 1,374 salmon were recorded as having passed up the River Bunree.

A new counting unit was installed at Islandbridge weir fish pass, but it has not yet come into general operation due to difficulties in calibration because of excessive turbulence.

The smolt trap at Galway sluice barrage functioned satisfactorily from 14th February to 27th June, the numbers of fish removed being: 255 kelts, 59,085 smolts, 92 sea trout, 85 brown trout, 53 eels, 7 lampreys, 3 perch and 6 pike. The maximum number of fish taken in one day was 11,180 on 24th April.

A new smolt trap similar to that at Galway was designed for installation at the State Hatchery, Glenties. An electric smolt counter installed at Mullaghmore for the Foyle Fisheries Commission, but which did not function satisfactorily possibly because of altered flow conditions resulting from drainage work upstream, will be transferred to the Hatchery at Glenties for test and checking.

Salmon Culture Installations :—The salmon hatchery and rearing station at Cong, Co. Mayo, was completed at a cost of £16,010, and operations on a partial scale were carried out. The capacity of the installation is 1,630,000 fish eggs and 270,000 under-yearlings. There is accommodation for 500 adult fish of which 250 would be intended for release in Lough Mask when ripe for spawning.

A new salmon trapping and smolt counting installation was designed for the Salmon Research Trust station at Furnace, Co. Mayo.

Rainbow Trout Farming :—Four proposals for the construction of large scale undertakings were examined and advice

was tendered as to the viability of the projects in the context of Irish conditions.

Six sites proposed for small scale fish farming units were investigated and advice was given on the projects, including where appropriate, suitable pond lay-outs. The owners of two existing units were advised as to expansion. One new demonstration unit was completed at Kilmaglish near Mullingar and was stocked.

The operational procedure in the fish farms established to date was kept under observation and remedial measures were recommended where necessary in the interest of the undertaking or of the migratory fish in the adjoining river system especially as regards the prevention of escape of rainbow trout and the danger of excessive abstraction of water to meet the demands of the ponds.

River Improvement Schemes :—Two river systems, the Gweebarra and the Dungloe Lakes, both in Co. Donegal, were surveyed by a team of undergraduate engineering students, with particular reference to the location and extent of actual and potential angling waters and spawning and nursery areas to enable comprehensive schemes for the development of fisheries in each of the two systems to be prepared.

There was a further increase in the development of spawning and nursery areas by Boards of Conservators, mechanical equipment being used for the work in a number of cases. Proposals for work of this nature for which grants may be made available continue to be received.

Fish Passes :—Thirty-two obstructions to fish movement were investigated and designs for fish passes were prepared for twenty-one of them. Six passes to the Department's design were built at Ovens, Co. Cork ; Laghey, Ballintra, and Ardara, Co. Donegal ; Lattery, Co. Galway ; and Carlow. An approach channel was designed and constructed at Lucan weir to assist fish movement across the weir at times when discharges are less than flood flows.

The elver pass at Galway was modified by the Office of Public Works at this Department's request to eliminate certain defects. Arrangements were made to ensure the free passage of elvers at Ballina during the construction work there in connection with the Moy drainage.

Application of electricity to fishery management and development :—An experimental station has been set up at Glenties Salmon Hatchery where the practical applications of electricity to fishery investigation management and exploitation are being studied.

General :—Five complaints of failure to comply with the regulations governing the screening at points of abstraction from and return of water to salmon rivers were examined and the parties responsible appropriately advised. Twelve proposals for the discharge of industrial effluents and four for domestic sewage from towns and villages were investigated and the sponsors were advised as to the action to be taken to prevent damage to fish life. Five

proposals to abstract water were examined and appropriate recommendations were made to obviate damage to fisheries.

Tentative proposals to embark on the cultivation on a large scale of fish in brackish water were discussed. The sponsors were advised on various matters connected with the proposals including sites for an experimental unit. Proposals for the introduction of warm water fish farming were under examination.

The Half-mile sanctuary areas in five rivers were set out and permanent markings arranged for.

The Engineer attended a post-graduate course on the principles and practice of aerial surveying with the purpose of applying that technique, where appropriate, to fishery management and development work.

FOYLE FISHERIES COMMISSION.—Details of the Commission's activities are published in its annual report for the year ended 30th September, 1964.

1964 was a record year as regards the salmon catch by commercial engines and became the third year in succession to show increased catches. Rod catches also showed a marked improvement.

	Salmon		Sea Trout		Total	
	No.	lbs.	No.	lbs.	No.	lbs.
Nets	149,633	1,075,312	*1,187	1,638	150,820	1,076,950
Rods	4,349	32,072	6,144	6,607	10,493	38,679
TOTAL	153,982	1,107,384	7,331	8,245	161,313	1,115,629

* Figure represents the Commission's catch only.

During the year the following regulations were made :—

1. Foyle Area (Control of Netting) (Amendment) Regulations, 1964.
2. Foyle Area (Close Season for Angling) Regulations, 1964.

Investigations of (i) escapement during the weekly close time, (ii) the composition of runs of adult fish, and (iii) the growth and movement of parr, smolts and brown trout in two tributaries, were continued.

The Commission produced 226,000 salmon ova at their hatchery and purchased a further 200,000 ova. The resulting fry were planted in various tributaries.

INLAND FISHERIES TRUST, INCORPORATED.—The Grant-in-Aid to the Inland Fisheries Trust was further increased to £90,000 in the year under review. Trust activities in the field of brown trout and rainbow trout development now extend over 150,000 acres of lakes and 1,000 miles of rivers, rainbow trout operations being confined

to self contained lakes. Coarse fish operations extend over a similar extent of waters, and investigation, organisation and promotion of sea angling over some 1,000 miles of sea coast.

Trout development work was extended in a number of areas. Work was resumed on Lough Arrow, Co. Sligo ; two lakes in Co. Monaghan and the River Camlin, Co. Longford, were cleared of coarse fish before restocking. A number of small lakes in popular tourist areas near the sea in Co. Cork were stocked experimentally with rainbow trout. Extensive surveys were made of additional coarse fishing waters in East Mayo, Galway, Clare and Limerick and stocking was begun.

Existing co-operation between the Trust and the Universities in Dublin, Cork and Galway of certain aspects of fishery biology was further extended by the offer of the Zoological Department, University College, Dublin, to provide facilities for investigations into fish life with particular emphasis on trout waters, food and growth rate and stock density.

A fundamental study of the biology of Irish coarse fishes was also begun in collaboration with Fisheries Division.

Detailed information on Trust's activities may be obtained in its Annual Report.

SALMON RESEARCH TRUST OF IRELAND INCORPORATED.

—Details regarding the Salmon Research Trust's activities and the enlargement and improvement of the Trust's installations are given in the annual report of the Trust for 1964. Improvements were made in the upstream trap at Furnace, the holding pen for hatchery parent fish and the smolt trap on the Cottage River. A store shed for boats and nets was erected at Furnace, a new smolt release pond was constructed on the north shore of Lough Furnace and work commenced on the construction of a further rearing pond.

Work was continued on the rearing of salmon of known ancestry, and smolts were fin clipped before release. The progeny of back-crosses between salmon and sea trout hybrids and salmon of both sexes were reared in 1964 in order to study the meristic characters and to compare them with the progeny of back-crosses to sea trout. An outline of progress made in these experiments is contained in Appendix III of the Trust's report. Feeding experiments were also conducted.

Work continued on the tagging of salmon and sea trout kelts.

The Trust continued investigations under the direction of a sub-committee (The Peat Silt Research Group) into the effect of peat silt on certain rivers.

MANAGEMENT OF FISHERIES.—The Fisheries Division managed one hundred and fifty-four fisheries on behalf of the Land Commission and Forestry Division, Department of Lands. Rents received during the year amounted to £3,136 6s. 10d., compared with £3,102 5s. 6d. in 1963.

Sixty-five fisheries were advertised for letting in 1964.

INTERNATIONAL AND OTHER CONFERENCES.—

(1) **CHALLENGER SOCIETY.**—The Challenger Society holds what are

described as Joint Meetings with Marine Laboratories, usually in Great Britain. A meeting of this kind, held in October, 1964, at the Freshwater Fisheries Laboratory of the Scottish Department of Agriculture at Pitlochry, Perthshire, was attended by the Department's Inspector of Fisheries and Scientific Adviser and one of the Assistant Inspectors, together with representatives of the Salmon Research Trust of Ireland, Inc. This meeting was devoted to papers concerned with the survival of salmon fry, tagging experiments with smolts and adult fish, the behaviour of salmon and trout at obstructions and ancillary subjects.

(2) SALMON RESEARCH GROUP.—This body was established by the British Development Commission to provide a forum for the discussion of problems into Atlantic salmon. The Department's Inspector of Fisheries and Scientific Adviser attended its two meetings in 1964, at Betws-y-Coed in North Wales in April, and in London in December. The April meeting was devoted to a field trip to Dyrnogydd Lake, where smolt rearing experiments are being conducted by the local River Board, followed by a discussion of the problems of smolt production, and the London meeting was devoted to a discussion of the properties of the blood of various salmonid fishes. The London meeting was also attended by a representative of the Salmon Research Trust of Ireland, Inc.

(3) SALMON AND TROUT ASSOCIATION.—The annual conference of this body, held in London in November, was attended by representatives of the Salmon Research Trust of Ireland, Inc. Water conservation and fisheries figured amongst the subjects for discussion.

(4) BALTIC SALMON WORKING GROUP.—This Group, established to discuss matters relating to the Baltic salmon stock, held a meeting in Kiel, Germany, in March, 1964. The Department's Inspector of Fisheries and Scientific Adviser, as Chairman of the Salmon and Trout Committee of the International Council for the Exploration of the Sea (see page 11) attended by invitation and took the opportunity to visit also the Freshwater Research Institute at Plön.

(5) EUROPEAN INLAND FISHERIES ADVISORY COMMISSION.—This Commission held its third meeting at Scharfling-am-Mondsee, Austria, during the period 20—25 April, 1964. Delegates from fifteen member countries and observers from four international organisations attended the meeting. The delegation from this country included the Chairman of the Commission (a former Assistant Secretary of the Department), two officers of the Department and a representative each from the Electricity Supply Board and the Salmon Research Trust of Ireland Inc. Matters of particular interest discussed related to pond fish culture and fish diseases (including fish diets, food control and methods of medication of virus diseases generally) and the report of a working party dealing with water quality criteria as a factor in the study and control of water pollution.

A number of papers were presented by the Irish delegation in relation to investigation and study of fishery problems; those published in the EIFAC series in 1964 are listed in Appendix No. 24.

LEGISLATION.—The Fisheries (Amendment) Act, 1964, became law on 14 July, 1964. The effect of the Act is to continue in permanent form, the existing temporary provision for rates on fisheries which would otherwise expire on 30 September, 1964.

Particulars of Statutory Instruments relating to inland fisheries made during the year are included in Appendix No. 22.

CHARLES J. HAUGHEY,

Minister for Agriculture and Fisheries

31 January, 1966.

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APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed
in 1963 and 1964

Kinds of Fish	Quantity		Value	
	1964	1963	1964	1963
	cwt.	cwt.	£	£
Soles	3,665	3,434	68,639	61,013
Brill	2,467	2,274	26,627	25,114
Turbot	2,207	2,214	22,170	23,678
Plaice	28,024	20,435	206,243	158,227
Dabs	4,185	2,934	10,533	7,906
Megrimus	3,105	2,742	7,908	7,860
Other Flat Fish	3,060	1,477	7,159	5,666
Ray/Skate	26,140	26,371	95,622	96,992
Cod	28,552	19,867	110,405	112,516
Haddock	35,089	19,788	86,455	72,531
Hake	2,111	2,496	12,600	18,494
Whiting	92,932	89,039	172,374	182,778
Pollack	8,478	11,027	27,263	38,831
Other Round Fish	27,140	6,220	22,312	17,761
TOTAL DEMERSAL	267,155	210,318	876,310	829,367
Herrings	160,929	165,696	155,440	193,068
Pilchards	7	14	19	51
Mackerel	26,308	14,980	38,891	33,753
Sprats	33,472	8,272	13,782	3,588
TOTAL PELAGIC	220,716	188,962	208,132	230,460
TOTAL WET FISH	487,871	399,280	1,084,442	1,059,827
	Nos.	Nos.		
Lobsters	383,622	271,761	162,249	106,101
Crawfish	109,638	82,787	69,229	46,810
Crabs	114,173	47,419	2,552	1,081
Escallops	343,379	474,669	9,015	8,992
Oysters	1,228,213	1,328,707	26,558	22,455
	cwt.	cwt.		
Dublin Bay Prawns	20,058	29,406	79,900	101,094
Mussels	17,751	17,635	7,913	9,291
Periwinkles	33,445	35,988	55,851	54,314
Other Shellfish	2,749	3,168	6,847	3,725
TOTAL VALUE SHELLFISH	—	—	420,114	353,863
TOTAL VALUE ALL FISH	—	—	1,504,556	1,413,690

APPENDIX No. 2

Comparison of the Average Prices per cwt. of various kinds of Sea Fish for the years 1957-1964

	1957	1958	1959	1960	1961	1962	1963	1964
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Soles ..	15 6 7	14 5 10	14 14 5	14 4 2	15 6 5	16 9 2	17 15 4	18 14 7
Brill ..	9 14 11	8 0 0	9 9 7	9 6 9	10 2 3	10 4 4	11 0 11	10 15 10
Turbot ..	9 2 0	10 7 1	9 16 2	10 2 2	10 0 0	10 0 8	10 13 11	10 0 11
Plaice ..	7 8 9	8 3 6	8 8 8	8 2 8	8 5 1	8 18 11	7 14 10	7 7 2
Dabs ..	—	—	—	—	*2 15 3	2 13 3	2 13 11	2 10 4
Megrims ..	—	—	—	—	*3 8 3	3 6 6	2 17 4	2 10 11
Ray/Skate ..	2 6 7	2 15 3	3 15 5	3 6 4	3 7 5	3 11 10	3 13 7	3 13 2
Cod ..	4 5 6	4 14 0	5 9 11	5 7 6	6 1 6	6 12 1	5 13 3	3 17 4
Haddock ..	2 2 0	2 17 1	3 5 5	3 16 3	5 5 8	6 7 1	3 13 4	2 9 3
Hake ..	4 17 0	6 9 7	6 19 7	7 12 7	6 0 9	7 17 11	7 8 2	5 19 4
Whiting ..	1 3 4	1 5 3	1 9 4	1 14 8	1 19 11	1 19 4	2 1 1	1 17 1
Pollack ..	—	—	—	—	*2 15 1	3 3 2	3 10 5	3 4 4
Herrings ..	0 14 10	1 1 3	1 3 8	0 18 11	0 16 9	1 7 9	1 3 4	0 19 4
Pilchards ..	—	—	—	—	*0 7 8	0 8 7	3 12 10	2 14 3
Mackerel ..	1 11 7	1 2 4	1 11 11	1 11 4	1 11 10	2 7 8	2 5 1	1 9 7
Sprats ..	0 5 6	0 6 8	0 7 8	0 13 0	0 7 3	0 7 2	0 8 8	0 8 3

N.B.—“ Average price ” as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

* Comparable figures for years prior to 1961 are not available for these varieties.

APPENDIX No. 3

Value of Landings of Sea Fish (excluding Salmon) at Ports at which
the Value of such Landings exceeded £20,000 in 1964.

Port	Total Value	Demersal	Pelagic	Shellfish
	£	£	£	£
1. Killybegs ..	220,251	135,477	81,607	3,167
2. Howth ..	170,778	166,101	783	3,894
3. Castletownbere ..	123,435	83,735	10,136	29,564
4. Dingle ..	90,927	60,337	6,098	24,492
5. Galway ..	77,709	60,750	2,165	14,794
6. Dumnore East ..	65,072	1,608	56,463	7,001
7. Kilmore Quay ..	62,018	43,154	635	18,229
8. Cahirciveen ..	45,727	40,136	1,789	3,802
9. Skerries ..	38,989	16,957	369	21,663
10. Dunlaoghaire ..	38,109	37,099	—	1,010
11. Clogherhead ..	33,189	15,645	11,138	6,406
12. Schull ..	32,445	25,093	1,641	5,711
13. Union Hall ..	30,723	23,422	3,237	4,064
14. Burtonport ..	30,409	16,381	10,598	3,430
15. Carna ..	25,699	45	66	25,588
16. Balbriggan ..	21,789	13,722	30	8,037

APPENDIX No. 4

IMPORTS AND EXPORTS OF FISH AND FISHERY PRODUCTS
IN 1964
(as compared with 1963)

	Quantity		Value	
	1964	1963	1964	1963
I.—IMPORTS :	cwt.	cwt.	£	£
Fish, fresh, chilled or frozen	12,845	26,209	78,325	172,558
Fish cured—not in airtight containers	29,911	34,800	212,924	231,932
Fish and fish preparations in airtight containers	27,870	22,039	540,275	401,553
Other fish and fish preparations	9,708	6,587	186,418	99,938
TOTALS	80,334	89,635	1,017,942	905,981
II.—EXPORTS :				
Fish, fresh, chilled or frozen . .				
Salmon . .	22,642	23,477	901,652	832,458
Herrings	55,832	66,269	110,410	120,912
Freshwater Eels . .	6,512	3,125	91,776	45,313
Other fish	16,756	5,776	158,349	64,146
Fish dried, salted or smoked not in airtight containers . .	15,030	51,106	90,048	178,517
Shellfish, fresh, chilled, frozen, salted, dried	62,535	55,703	492,925	442,278
Other fish and fish preparations	4,632	2,084	102,871	35,555
TOTALS	183,939	207,540	1,948,031	1,719,179

APPENDIX No. 5
HERRING FISHING 1964

County	Ports at which more than 500 cwt. were landed	Total Quantity cwt.	Value £
Louth ..	—	467	505
Dublin ..	Howth	1,000	1,039
Wicklow ..	—	185	487
Wexford ..	—	69	178
Waterford ..	Dunmore East, Passage East	63,875	58,228
Cork ..	Castletownbere, Kilocrohane	3,197	4,891
Kerry ..	—	423	781
Clare ..	—	—	—
Galway ..	—	414	1,120
Mayo ..	Achill	1,760	1,218
Sligo ..	—	—	—
Donegal ..	Killybegs, Burtonport	89,539	86,993
	TOTALS	160,929	155,440

APPENDIX No. 6
MACKEREL FISHING 1964

County	Ports at which more than 250 cwt. were landed	Total Quantity cwt.	Value £
Louth ..	—	—	—
Dublin	—	43	142
Wicklow	—	—	—
Wexford	Kilmore Quay	275	520
Waterford	Passage East	362	582
Cork	Kinsale, Castletownbere, Union Hall, Schull, Ballycotton, Baltimore	9,809	19,132
Kerry	Dingle, Cahirciveen	2,786	6,993
Clare ..	—	389	1,495
Galway	Galway	838	2,254
Mayo ..	Lackan	608	1,470
Sligo ..	—	16	87
Donegal	Killybegs	11,182	6,216
	TOTALS	26,308	38,891

APPENDIX No. 7
REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL
ENGAGED IN FISHING IN 1964

Coast	How Engaged	Men	Total Vessels	Motor Vessels						Boats propelled by outboard engines, sails or oars	
				Gross Tons						18' Keel and upwards	Less than 18' Keel
				75—120	50—74	25—49	15—24	10—14	Under 10		
EAST (Omeath to Carnsore Point)	Solely	401	125	2	4	57	7	2	18	31	4
	Partially	218	64	—	—	—	1	1	8	43	11
	Laid-up	—	1	—	—	1	—	—	—	—	—
	TOTALS	619	190	2	4	58	8	3	26	74	15
SOUTH (Carnsore Point to Loop Head)	Solely	625	405	—	8	57	16	16	92	115	101
	Partially	919	102	—	—	—	—	5	17	35	45
	Laid-up	—	3	—	—	3	—	—	—	—	—
	TOTALS	1,544	510	—	8	60	16	21	109	150	146
WEST (Loop Head to Erris Head)	Solely	232	243	—	1	14	7	3	59	123	36
	Partially	1,409	361	—	—	—	—	—	29	168	164
	Laid-up	—	—	—	—	—	—	—	—	—	—
	TOTALS	1,641	604	—	1	14	7	3	88	291	200
NORTH (Erris Head to Moville)	Solely	392	277	2	6	25	6	2	81	146	9
	Partially	1,295	254	—	—	—	1	2	36	169	46
	Laid-up	—	6	—	—	2	—	—	4	—	—
	TOTALS	1,687	537	2	6	27	7	4	121	315	55
TOTALS (All Coasts)	Solely	1,650	1,050	4	19	153	36	23	250	415	150
	Partially	3,841	781	—	—	—	2	8	90	415	266
	Laid-up	—	10	—	—	6	—	—	4	—	—
	TOTALS	5,491	1,841	4	19	159	38	31	344	830	416

APPENDIX No. 8
TRAWLING AND SEINING, 1964

Port or Locality	Number of men engaged	Number of boats engaged	Tonnage of Motor Boats			Fishing Period
			Not exceeding 10 tons	Over 10 tons	Over 15 tons	
Clogherhead	25	5	—	—	5	All year.
Balbriggan	30	6	—	—	6	All year.
Skerries	40	8	—	—	8	All year.
Howth	104	18	—	—	18	All year.
Dun Laoghaire	10	2	—	—	2	All year.
Arklow	120	25	—	5	20	All year.
Wexford	14	4	—	3	1	All year.
Kilmore Quay	45	9	—	—	9	All year.
Passage East and Dunmore East	25	5	—	—	5	All year.
Helvick	15	3	—	—	3	All year.
Ballycotton	5	1	—	—	1	All year.
Union Hall and Raheen	31	7	—	—	5	All year.
Baltimore	5	1	—	—	1	All year.
Schull	20	4	—	—	4	All year.
Castletownbere	50	10	—	—	10	All year.
Ballinskelligs	5	1	—	—	1	All year.
Cahirciveen	15	3	—	—	3	All year.
Dingle	80	16	—	—	16	All year.
Portmagee	20	4	—	—	4	All year.
Liscannor	4	1	—	—	—	Spring, Summer and Autumn.
Galway and Aran Islands	65	13	—	—	13	All year.
Roundstone	2	1	1	—	—	Spring and Autumn.
Cleggan and Inishbofin	16	5	3	1	1	All year.
Murrisk	4	1	—	—	1	All year.
Achill	20	5	—	—	5	All year.
Enniscrone	6	3	3	—	—	Spring, Summer and Autumn.
Killybegs	126	21	—	—	21	All year.
Teelin	5	1	—	—	1	All year.
Burtonport	42	7	—	—	7	All year.
Kincasslagh	5	1	—	—	1	All year.
Dunfanaghy	2	1	1	—	—	Spring and Autumn.
Buncrana	10	3	1	—	2	All year.
Glengad	28	11	9	2	—	All year.
Greencastle	51	13	5	—	8	All year.
TOTALS	1,045	220	25	13	182	

APPENDIX No. 9

STATEMENT OF ACCOUNT IN RESPECT OF REPAYABLE
ADVANCES.

- I. Advances of £408,500 made to the Irish Sea Fisheries Association Ltd., during the period of twenty-one years to 23 April, 1952, for the provision of boats and gear :—

	£
Advances and interest thereon up to 31 March, 1960	566,255
Repayments made to 31 March, 1960	248,281
Amount written off in 1961-62	186,000
Balance of advances to be repaid by a new annuity ..	131,974
	<u>566,255</u>
Instalments of new annuity to accrue up to 1972 ..	160,433
Repayments of new annuity :	
Made to 31 March, 1963	33,423
Made during year ended 31 March, 1964	13,369
Not accrued at 31 March, 1964	113,641
	<u>160,433</u>

- II. Advances of £63,215 made to Irish Sea Fisheries Association Ltd., during the period of five years to 23 April, 1952, for purposes other than boats and gear :—

	£
Total repayments to be made including interest ..	85,973
Repayments :	
Made to 31 March, 1963 ..	50,092
Made during year ended 31 March, 1964	4,278
Not accrued at 31 March, 1964	31,603
	<u>85,973</u>

- III. Advances of £1,738,563 during the period of twelve years to 31 March, 1964, for the provision of boats and gear and for other purposes :—

	£
Total repayments to be made, including interest ..	2,960,774
Repayments :	
Made to 31 March, 1963	610,405
Made during year ended 31 March, 1964	118,572
Not accrued at 31 March, 1964	2,231,797
	<u>2,960,774</u>

APPENDIX No. 10

COASTAL EXTENT OF FISHERY DISTRICTS AND NAMES OF
THE PRINCIPAL RIVERS IN EACH DISTRICT

District	Coastal Extent of District	Principal Rivers
No. 1 Dublin	Most easterly point on Red Island, Skerries, to Wicklow Head.	Liffey Vartry.
No. 2 Wexford	Wicklow Head to Kiln Bay, east of Bannow Bay, Co. Wexford.	Slaney Avoca.
No. 3 Waterford	Kiln Bay, east of Bannow Bay, to Helvick Head, Co. Waterford.	Suir Barrow Nore.
No. 4 Lismore	Helvick Head to Ballycotton Pier, Co. Cork.	Blackwater, Funshion. Bride, Awbeg.
No. 5 Cork	Ballycotton Pier to Crow Head, Co. Cork.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarriff, Adrigole.
No. 7 Kerry	Crow Head, Co. Cork, to Kerry Head, Co. Kerry.	Roughty, Sheen, Finnihy, Blackwater, Sneem, Launc, Flesk, Maine, Caragh, Cur- rane, Cummeragh, Inny.
No. 8 Limerick	Kerry Head, Co. Kerry, to Hag's Head, Co. Clare.	Shannon, Deel, Fergus, Mulcair, Little and Upper Brosna, Inny, Maigue, Feale.
No. 9 ¹ Galway	Hag's Head to the sea point of the boundary between the townlands of Kcraunagark Sth. and Banraghbaun Sth., Co. Galway.	Corrib, Claregalway.
No. 9 ² Connemara	The sea point of the boundary between the townlands of Kcraunagark South and Banraghbaun South, Co. Galway, to Slyne Head, Co. Galway.	Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace.
No. 10 ¹ Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Erriff, Bundo- rragha, Dawros, Carrowniskey, Bun- owen (Louisburgh).
No. 10 ² Bangor	Pigeon Point to Benwee Head, Co. Mayo	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy.
No. 11 Ballina	Benwee Head to Coonamore Point, Co. Sligo.	Moy, Cloonaghmore (Palmerston), Easkey.

District	Coastal Extent of District	Principal Rivers
No. 12 Sligo	Coonamore Point to Carrickgarve, Co. Sligo.	Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
No. 13 Ballyshannon	Carrickgarve to Rossan Point, Co. Donegal.	Erne, Bundrowes, Bunduff, Eske, Eaney Water, Oily, Glen.
No. 14 ¹ Letterkenny	Rossan Point to Malin Head, Co. Donegal.	Owenea, Gweebarra, Gweedore (Crolly), Clady, Lackagh, Lennon, Crana.
No. 17 ² Dundalk	Carlingford Lough to Clogherhead, Co. Louth.	Fane, Dee, Glyde.
No. 17 ¹ Drogheda	Clogherhead to the most easterly point on Red Island, Skerries, Co. Dublin.	Boyne, Blackwater, Deel.

Note—The area comprised in the former No. 14² or Moville District was, by the Foyle Fisheries Act, 1952, incorporated in the Foyle Area which is administered by the Foyle Fisheries Commission.

APPENDIX No. 11

Quantity and Value of all Salmon and Sea Trout taken in 1962, 1963
and 1964 by Instruments of Capture.

SALMON						
Instruments	1964	1963	1962	1964	1963	1962
Total for all engines	lb. 3,012,664	lb. 2,836,640	lb. 2,863,868	£ 789,318	£ 703,217	£ 620,467
Total for rod and line	390,079	341,539	257,579	121,700	101,101	74,356
Total for drift nets	761,568	687,159	606,806	177,639	143,771	114,851
Total for draft nets	1,496,023	1,395,945	1,622,645	379,019	348,028	347,135
Total for stake nets, weirs, etc.	364,989	411,997	376,838	110,960	110,317	84,125

SEA TROUT						
Instruments	1964	1963	1962	1964	1963	1962
Total for all engines	lb. 105,689	lb. 91,681	lb. 90,380	£ 17,251	£ 15,231	£ 15,034
Total for rod and line	71,918	64,835	63,034	11,209	9,946	9,701
Total for drift nets	1,203	838	1,437	213	167	274
Total for draft nets	29,707	21,908	23,442	5,177	4,226	4,622
Total for stake nets, weirs, etc.	2,861	4,100	2,467	652	892	437

This Appendix does not include returns from the former Merville Fishery District.

APPENDIX No. 12

Quantity and Value of Salmon taken in 1962, 1963 and 1964 by Fishery Districts

Fishery District		Quantity			Value		
		1964 lb.	1963 lb.	1962 lb.	1964 £	1963 £	1962 £
Dublin	R	2,913	4,128	2,395	1,136	1,409	913
	N	6,510	7,161	8,672	1,834	1,922	1,862
Wexford	R	29,178	29,567	11,946	10,515	9,505	4,394
	N	40,024	43,894	21,643	14,808	15,785	7,544
Waterford	R	51,264	43,236	32,782	15,489	12,696	9,804
	N	304,598	371,890	359,643	76,697	84,416	63,856
Lismore	R	45,595	39,863	27,500	13,651	11,542	7,670
	N	238,741	259,826	249,589	67,884	64,611	49,561
Cork	R	26,321	28,833	17,462	9,145	9,818	5,653
	N	95,607	87,077	75,755	23,121	22,200	15,863
Kerry	R	46,139	46,437	29,881	13,548	13,309	7,967
	N	343,116	267,511	305,602	84,359	62,374	56,359
Limerick	R	61,803	47,817	43,469	20,963	13,968	13,894
	N	347,151	358,956	373,451	98,502	84,463	94,910
Galway	R	10,337	7,681	4,632	2,991	2,167	1,181
	N	50,660	52,661	57,762	17,083	15,150	13,653
Connemara	R	6,031	4,842	7,303	1,642	1,270	1,976
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	7,943	7,412	6,517	2,246	2,097	1,232
	N	34,116	28,225	48,477	6,654	5,469	7,861
Bangor	R	9,489	12,140	6,597	2,777	3,500	1,909
	N	89,322	80,172	143,098	18,773	15,818	27,480
Ballina	R	26,447	17,586	27,562	7,115	4,519	6,598
	N	450,877	374,039	397,668	104,103	84,372	89,900
Sligo	R	12,269	8,112	5,777	3,921	2,203	1,758
	N	70,406	61,969	85,023	17,118	14,323	19,926
Ballyshannon	R	10,445	5,797	6,951	3,187	1,731	1,493
	N	127,611	96,450	144,267	29,098	20,724	24,325
Letterkenny	R	24,561	17,782	13,220	6,319	4,711	3,087
	N	253,092	212,673	211,438	53,151	42,657	37,432
Dundalk	R	5,203	6,995	4,004	1,674	2,017	998
	N	67,865	70,250	51,365	17,886	17,316	10,945
Drogheda	R	14,121	13,261	9,581	5,381	4,639	3,829
	N	102,889	122,347	72,836	36,747	50,516	26,634
TOTALS		3,012,664	2,836,640	2,863,868	789,318	703,217	620,467

* R indicates capture by means of single rod and line ;
N by means of nets, weirs, etc.

APPENDIX No. 13

Quantity and Value of Sea Trout taken in 1962, 1963 and 1964 by Fishery Districts

Fishery District	*	Quantity			Value		
		1964 lb.	1963 lb.	1962 lb.	1964 £	1963 £	1962 £
Dublin	R	1,859	1,267	2,421	286	207	428
	N	4,577	3,716	4,146	946	846	916
Wexford	R	2,643	968	2,242	393	138	420
	N	8,396	3,345	3,755	1,425	509	632
Waterford	R	3,130	788	526	562	109	134
	N	354	428	566	48	39	80
Lismore	R	552	552	1,346	62	105	262
	N	1,552	1,687	1,347	232	251	183
Cork	R	8,532	7,398	4,937	1,235	1,069	687
	N	1,026	2,427	374	204	384	58
Kerry	R	12,176	12,098	10,707	1,924	1,839	1,583
	N	4,137	4,165	2,777	819	875	459
Limerick	R	5,156	5,784	6,627	787	864	980
	N	4,719	5,191	8,311	1,032	1,428	2,006
Galway	R	2,166	3,041	1,751	366	487	268
	N	36	239	515	5	39	60
Connemara	R	9,543	11,319	11,679	1,436	1,803	1,718
	N	Nil	Nil	Nil	Nil	Nil	Nil
Ballinakill	R	6,771	4,891	4,870	1,032	777	722
	N	1,016	910	916	133	124	145
Bangor	R	7,680	6,508	5,578	1,200	988	838
	N	2,920	843	657	416	119	122
Ballina	R	2,347	1,232	1,287	330	171	222
	N	64	74	89	10	13	11
Sligo	R	538	654	545	88	108	85
	N	133	240	360	24	48	72
Ballyshannon	R	2,229	1,572	1,717	330	251	330
	N	676	299	497	93	41	53
Letterkenny	R	3,762	3,713	3,046	559	537	427
	N	695	486	442	103	74	63
Dundalk	R	1,070	1,032	2,107	177	154	325
	N	2,655	2,196	1,063	114	375	186
Drogheda	R	1,907	1,912	1,648	342	339	272
	N	815	600	1,531	138	120	287
TOTALS		105,689	91,681	90,380	17,251	15,231	15,034

* R indicates capture by means of single rod and line ;
N by means of nets, weirs, etc.

APPENDIX No. 14

Quantity and Value of Eels taken in 1962, 1963 and 1964 by Fishery Districts

Fishery District	Quantity			Value		
	1964	1963	1962	1964	1963	1962
	lb.	lb.	lb.	£	£	£
Dublin	380	Nil	Nil	38	Nil	Nil
Wexford	102,654	33,200	Nil	12,832	3,662	Nil
Waterford	6,560	7,576	8,035	768	702	750
Lismore	Nil	Nil	160	Nil	Nil	12
Limerick	88,987	73,934	131,021	18,960	12,851	16,774
Galway	40,278	43,928	48,731	7,574	7,267	7,070
Bangor	140	Nil	Nil	25	Nil	Nil
Ballina	1,668	2,763	3,373	332	332	501
Sligo	6,656	8,065	2,505	1,191	1,557	239
Ballyshannon	42,001	12,000	12,628	4,827	1,749	1,347
Dundalk	7,689	28,511	12,142	896	4,193	1,263
Drogheda	25,492	21,723	8,492	3,041	2,484	1,260
TOTALS	322,505	231,700	227,087	50,484	34,797	29,216

The catch figures set out above are based on returns which were furnished to Fisheries Division by the fishermen.

APPENDIX No. 15

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all Engines in 1962, 1963 and 1964 by Fishery Districts.

Fishery District	Total weight for District			Total value for District		
	1964 lb.	1963 lb.	1962 lb.	1964 £	1963 £	1962 £
Dublin ..	16,239	16,272	17,634	4,240	4,384	4,119
Wexford ..	182,895	110,974	39,586	39,773	29,599	12,990
Waterford ..	365,906	423,918	401,552	93,564	97,962	74,624
Lismore ..	286,297	302,034	279,942	81,829	76,509	57,688
Cork ..	131,486	125,785	98,528	33,805	33,471	22,261
Kerry ..	405,568	330,211	348,967	100,650	78,397	66,368
Limerick ..	507,816	491,682	562,879	140,244	113,574	128,564
Galway ..	103,477	107,550	113,391	28,019	25,110	22,232
Connemara ..	15,574	16,161	18,982	3,078	3,073	3,694
Ballinakill ..	49,846	41,438	60,780	10,065	8,467	9,960
Bangor ..	109,551	99,663	155,930	23,191	20,425	30,349
Ballina ..	481,403	395,694	429,979	111,890	89,407	95,232
Sligo ..	90,002	79,040	94,210	22,342	18,239	22,080
Ballyshannon ..	182,962	116,118	166,060	37,535	24,496	27,548
Letterkenny ..	282,130	234,654	228,146	60,132	47,979	41,009
Dundalk ..	84,482	108,984	70,681	21,047	24,055	13,717
Drogheda ..	145,224	159,843	94,088	45,649	58,098	32,282
TOTALS ..	3,440,858	3,160,021	3,181,335	857,053	753,245	664,717

APPENDIX No. 16

Number, Quantity and Value of Salmon taken by Single Rod and Line in 1962, 1963 and 1964 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1964	1963	1962	1964	1963	1962	1964	1963	1962
				lb.	lb.	lb.	£	£	£
Dublin	351	469	315	2,913	4,128	2,395	1,136	1,409	913
Wexford	3,034	3,011	1,442	29,178	29,567	11,946	10,515	9,505	4,394
Waterford	6,827	5,047	4,164	51,264	43,236	32,782	15,489	12,696	9,804
Lismore	5,898	4,261	3,315	45,595	39,863	27,500	13,651	11,542	7,670
Cork	4,231	3,384	2,223	26,321	28,883	17,462	9,145	9,818	5,653
Kerry	6,661	6,109	4,248	46,139	46,437	29,881	13,548	13,309	7,967
Limerick	8,258	5,736	5,805	61,803	47,817	43,469	20,963	13,968	13,894
Galway	1,646	1,067	729	10,337	7,681	4,632	2,991	2,167	1,181
Connemara	976	698	1,057	6,031	4,842	7,303	1,642	1,270	1,976
Ballinakill	1,261	1,009	960	7,943	7,412	6,517	2,246	2,097	1,232
Bangor	1,064	1,333	922	9,489	12,140	6,597	2,777	3,500	1,909
Ballina	4,077	2,501	3,990	26,447	17,586	27,562	7,115	4,519	6,598
Sligo	1,585	1,007	810	12,269	8,012	5,777	3,921	2,203	1,758
Ballyshannon	1,481	714	971	10,445	5,797	6,951	3,187	1,731	1,493
Letterkenny	3,542	2,182	2,013	24,581	17,782	13,220	6,319	4,711	3,087
Dundalk	518	730	504	5,203	6,995	4,004	1,674	2,017	998
Drogheda	1,100	1,136	803	14,121	13,261	9,581	5,381	4,639	3,829
TOTALS	52,510	40,394	34,271	390,079	341,539	257,579	121,700	101,101	74,356

APPENDIX No. 17

Number, Quantity and Value of Sea Trout taken by Single Rod and Line in 1962, 1963 and 1964 by Fishery Districts.

Fishery District	No. of Fish			Quantity			Value		
	1964	1963	1962	1964	1963	1962	1964	1963	1962
				lb.	lb.	lb.	£	£	£
Dublin	2,348	1,662	2,421	1,859	1,267	2,421	286	207	428
Wexford	3,418	1,240	2,485	2,643	968	2,242	393	138	420
Waterford	2,726	835	663	3,130	788	526	562	109	134
Lismore	384	603	555	409	658	1,346	62	105	262
Cork	10,997	8,575	5,141	8,532	7,398	4,937	1,335	1,069	687
Kerry	10,439	10,826	8,404	12,176	12,098	10,707	1,924	1,839	1,583
Limerick	5,868	6,453	7,703	5,156	5,784	6,627	787	864	980
Galway	2,174	3,053	1,699	2,166	3,041	1,751	366	487	268
Connemara	9,143	10,779	10,868	9,543	11,319	11,679	1,436	1,803	1,718
Ballinakill	6,138	4,581	4,285	6,771	4,891	4,870	1,032	777	722
Bangor	8,438	6,898	5,750	7,680	6,508	5,578	1,200	988	838
Ballina	2,443	1,170	1,121	2,347	1,232	1,287	330	171	222
Sligo	459	678	448	538	654	545	88	108	85
Ballyshannon	2,720	1,537	1,117	2,229	1,572	1,717	330	251	330
Letterkenny	3,927	4,168	3,395	3,762	3,713	3,046	559	537	427
Dundalk	1,072	968	2,058	1,070	1,032	2,107	177	154	325
Drogheda	1,961	1,649	1,795	1,907	1,912	1,648	342	339	272
TOTALS	74,655	65,675	59,908	71,918	64,835	63,034	11,209	9,946	9,701

APPENDIX No. 18

PARTICULARS OF RECEIPTS AND EXPENDITURE OF BOARDS OF CONSERVATORS
FOR THE YEAR ENDED 30 SEPTEMBER, 1964

Fishery District	RECEIPTS						EXPENDITURE					
	Opening Balance	Licence Duty	Fishery Rate	Grant from Department	Miscellaneous Receipts	Total Receipts	Salaries	Water Keepers	Law Costs	Traveling and Miscellaneous	Total Expenditure	Closing Balance
	£	£	£	£	£	£	£	£	£	£	£	£
Dublin	+ 291	2,045	301	800	555	3,701	1,394	529	36	1,620	3,579	+ 413
Wexford	+ 296	1,813	1,771	700	177	4,461	827	1,849	290	1,406	4,372	+ 385
Waterford	+ 580	3,748	2,669	5,700	346	12,463	1,542	6,457	—	4,648	12,647	+ 396
Lismore	+ 952	1,801	6,771	3,000	94	11,666	1,145	8,139	—	2,067	11,351	+ 1,267
Cork	+ 1,660	2,703	1,048	3,500	371	7,622	1,086	5,544	49	2,876	9,555	— 273
Kerry	+ 2,567	2,850	3,362	1,400	388	8,000	1,201	5,224	110	2,100	8,635	+ 1,932
Limerick	+ 3,484	4,681	4,365	7,000	1,065	17,111	1,449	10,284	403	6,987	19,123	+ 1,472
Galway	+ 1,653	1,276	3,029	1,000	440	5,745	2,511	929	288	1,634	5,362	+ 2,036
Connemara	+ 495	697	1,702	—	42	2,441	381	1,577	—	515	2,473	+ 463
Ballinakill	+ 101	730	1,255	800	225	3,010	404	1,658	20	531	2,613	+ 498
Bangor	+ 31	1,204	1,633	1,000	395	4,232	1,162	1,760	16	850	3,788	+ 475
Ballina	— 414	1,310	4,509	300	296	6,415	817	4,317	125	1,014	6,273	— 272
Sligo	+ 492	741	1,114	—	204	2,059	451	1,044	25	661	2,181	+ 370
Ballyshannon	+ 304	1,364	608	1,300	3,034	6,306	790	3,413	—	1,553	5,756	+ 854
Letterkenny	+ 1,240	2,997	2,220	—	491	5,708	1,203	3,181	179	1,327	5,890	+ 1,058
Drogheda	+ 572	1,845	1,976	2,400	716	6,937	778	3,208	60	1,610	5,656	+ 1,853
Dundalk	+ 456	1,098	466	1,800	168	3,532	461	1,563	240	1,146	3,410	+ 578
TOTALS	+ 14,760	32,903	38,799	30,700	9,007	111,409	17,602	60,676	1,841	32,545	112,664	+ 13,505

APPENDIX No. 19
PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1964

Fishery District	SALMON ROD								Special Local Licences (Tidal Waters)	Draft Net	Drift Net	Pole Net	Bag Net	Stake Net	Head Weir	Box or Crib	Loop Net	Snap Net	Gap, eye basket or Coghill Net for Eels	Long Line for Eels	Oyster Dredge	Eel Trap	Fyke Net for Eels
	Annual (all districts)	Annual (District of issue)	Late Season (all districts)	Twenty-one day (all districts)	Seven day (all districts)	Late Season (district of issue)	Foyle Area extension (one district)	Foyle Area extension (all districts)															
Dublin	367	68	35	—	52	42	—	3	—	16	19	—	—	—	—	—	4	—	—	—	—	—	4
Wexford	134	144	—	—	211	98	—	—	—	98	—	4	—	—	—	—	—	—	—	—	—	—	141
Waterford	110	754	4	2	110	20	—	—	—	19	115	—	1	—	—	—	—	134	16	—	—	—	—
Lismore	69	242	13	1	379	—	—	—	—	11	73	—	—	2	—	1	17	—	1	—	—	—	—
Cork	232	288	19	—	345	126	—	—	—	48	20	—	—	—	—	—	—	—	—	—	—	—	—
Kerry	179	306	11	2	802	253	—	2	—	77	8	—	1	—	—	3	—	—	—	—	20	—	—
Limerick	203	872	13	—	132	49	—	—	—	120	82	—	—	4	—	4	—	—	34	15	—	—	—
Galway	74	73	32	—	211	56	—	—	—	13	—	—	—	—	—	5	—	—	23	7	82	—	—
Connemara	11	16	—	—	327	137	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Ballinakill	12	30	20	—	240	108	—	1	—	16	—	—	—	—	—	—	—	—	—	—	1	—	—
Bangor	62	42	16	—	416	98	—	—	—	34	4	—	2	—	—	—	—	—	—	1	—	—	—
Ballina	43	137	15	—	207	46	—	—	—	15	61	—	—	—	—	7	—	—	30	5	—	—	—
Sligo	62	112	2	—	60	13	—	1	—	9	3	—	1	—	—	—	—	—	1	3	—	—	—
Ballyshannon	41	53	4	—	251	46	22	33	11	66	22	—	—	—	—	2	—	—	13	15	—	—	—
Letterkenny	68	383	18	—	405	125	100	56	10	39	69	—	—	—	—	2	30	—	—	—	—	—	—
Drogheda	165	111	7	—	23	4	—	—	—	176	—	—	—	—	—	6	—	—	3	3	—	12	—
Dundalk	65	142	6	—	21	50	42	15	—	35	—	—	—	—	—	—	—	—	15	1	—	—	—
TOTALS	1,897	3,773	215	5	4,192	1,271	164	111	21	792	476	4	5	8	—	32	34	151	137	50	103	12	145

APPENDIX No. 20

Licence Duties Payable on Fishing Engines.

	£	s.	d.
On each Salmon Rod—Annual (valid all districts)	4	0	0
Do. Salmon Rod—Late Season (valid all districts)	3	0	0
Do. Salmon Rod—Twenty-one day (valid all districts)	3	0	0
Do. Salmon Rod—Seven day (valid all districts)	1	0	0
Do. Salmon Rod—Annual (valid district of issue only)	3	0	0
Do. Salmon Rod—Late Season (valid district of issue only)	2	0	0
Do. Salmon Rod—Foyle area extension (valid all districts)	2	10	0
Do. Salmon Rod—Foyle area extension (valid district of issue only)	1	10	0
On each—Draft net	4	0	0
Do. —Drift net	3	0	0
Do. —Snap net	2	10	0
Do. —Bag net	10	0	0
Do. —Stake net	30	0	0
Do. —Head Weir	6	0	0
Do. —Box or Crib	10	0	0
Do. —Gap, Eye, Basket or Coghill Net for Eels	2	0	0
Do. —Long line for Eels	2	0	0
Do. —Oyster Fishing engine	2	0	0

LICENCE DUTIES PAYABLE ON FISHING ENGINES OTHER THAN THOSE MENTIONED ABOVE

Fishery District	Pole Net	Loop Net	Eel Trap	Special Local Licences	
				Rod	Draft Net
	£ s.	£ s.	£ s.	£ s.	£ s.
1. Dublin	2 0	—	—	—	—
2. Wexford	2 0	—	—	—	—
3. Waterford	2 0	—	—	—	—
4. Lismore	2 0	—	—	—	—
5. Cork	2 0	—	—	—	—
7. Kerry	2 0	—	—	—	—
8. Limerick	2 0	—	—	—	—
9. Galway	2 0	—	15 0	—	—
9 ² . Connemara	2 0	—	—	—	—
10 ¹ . Ballinakill	2 0	—	—	—	—
10 ² . Bangor	2 0	—	—	—	—
11. Ballina	2 0	—	—	—	—
12. Sligo	2 0	—	—	—	—
13. Ballyshannon	2 0	—	2 0	*3 0	*25 0
14 ¹ . Letterkenny	2 0	0 10	—	†3 0	†12 10
					†20 0
17 ¹ . Drogheda	2 0	0 10	2 0	—	—
17 ² . Dundalk	2 0	—	—	—	—

† River Lackagh Tidal Waters. * River Erne Tidal Waters.

† River Owenea Tidal Waters.

APPENDIX No. 21
PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1964

Date of Inquiry	Where Held	Subject Matter	Decision on Report of Inquiry
17 November, 1964	Muine Bheag	Alteration of the annual close seasons for the capture of salmon by net and by rods in the Rivers Suir, Nore and Barrow and their lakes and tributaries.	No change.
18 November, 1964	Waterford	do. do.	No change.
19 November, 1964	Clonmel	do. do.	No change.
20 November, 1964	Kilkenny	do. do.	No change.
26 November, 1964	Galway	Alteration of weekly close time for the capture of salmon and trout in Galway fishery district.	Weekly close time to be altered in respect of the River Corrib only.

APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN 1964

GENERAL

Elections of Conservators of Fisheries Regulations, 1964 (S.I. No. 190 of 1964), dated 27 July, 1964.

PROVIDING for postal nominations and postal voting for elections to boards of conservators.

An tOrdú Iascaigh (Feidhmeanna Aire a Tharmligean), 1964 (I.R. Uimh. 256 de 1964), deinte ag an Rialtas 27 Deireadh Fómhair, 1964.

AG TARMLIGEAN chun Rúnai Parlaiminte an Aire Tailte cumhachtaí agur dualgais an Aire Tailte maidir le hiascach.

Salmon Export Levy (Amendment) Regulations, 1964 (S.I. No. 292 of 1964), dated 16 December, 1964.

PERMITTING the payment of the levy on salmon exports either by cheque or by postal stamps.

LOCAL

Cork District Bye-Law No. 514, 1964, dated 21 January, 1964.

PROHIBITING during specified periods, in the waters of the River Lee, its lakes and tributaries, and Cork Harbour—

- (a) fishing or attempting to fish for salmon by any means whatsoever ;
- (b) the use, for angling in a specified portion of the waters, of any lure other than artificial fly as used in angling for brown trout.

Wexford District Trammel Netting Bye-Law No. 515, 1964, dated 21 January, 1964.

PERMITTING between sunrise and sunset the use of trammel nets for the capture of sea-fish in the sea along the coast (but not in the tideway of any estuary) of Counties Wexford and Wicklow.

Cork District Bye-Law No. 516, 1964, dated 21 February, 1964.

AMENDING Articles 4 and 5 of the Cork District Bye-Law No. 514, 1964, by substituting " 29th day of February, 1964 " for " 16th day of March, 1964."

Wexford District Close Season Bye-Law No. C.S. 110, 1964, dated 2 March, 1964.

FIXING the annual close season for angling for trout in the River Slaney and its tributaries.

REVOKING that portion of the Wexford District Close Season Bye-law No. C.S. 96, 1944, as applied to trout angling.

River Slaney (Angling) Bye-Law No. 517, 1964, dated 2 March, 1964.

PROHIBITING, during specified periods, within defined portions of the River Slaney, angling with any lure other than artificial fly.

Castlemaine Harbour Mussel Fisheries Bye-Law No. 518, 1964, dated 1 June, 1964.

SUSPENDING mussel fishing in specified parts of Castlemaine Harbour during the period 1 October, 1964, to 30 September, 1965.

Ballyshannon District Netting Bye-Law No. 519, 1964, dated 6 July, 1964.

PERMITTING the use of draft nets not exceeding 85 yards in length for the taking of salmon or trout during the period from 6 July to 19 August, 1964, in the portions of the tidal waters of the River Erne and Abbey River specified in the bye-law, notwithstanding the prohibitions contained in the Ballyshannon District Bye-Law No. 511, 1963.

River Erne (Special Local Licences) (Amendment) Order, 1964 (S.I. No. 163 of 1964) dated 6 July, 1964.

PROVIDING that the special local licence duty payable in respect of a draft net for use in the tidal waters of the River Erne shall be £15.

APPENDIX No. 23
OUTPUT OF OVA IN 1963/64

	River system stocked	Salmon Ova (^{'000})	Sea Trout Ova (^{'000})	Brown Trout Ova (^{'000})
Lismore	Ova sent to hatching stations throughout the State	393	—	—
Mallow	River Blackwater and tributaries	1,000	—	—
Inistioge	River Nore and tributaries	327	—	—
Loughrea	Lough Rea	—	—	228
Parteen	Shannon and tributaries	1,023	—	—
Cloncrin	Tributaries of River Suck, Loughs Corrib and Mask and Sligo lakes	—	—	475
Mullingar	Loughs Sheelin, Ennel, Owel and Derravarragh	—	—	1,200
Panure	Various Trust waters, and waters of various angling associations	—	—	1,800
Oughterard	Lough Corrib and tributaries	—	—	250
Cong	River Corrib	65	—	20
Screebe	Screebe River	190	102	—
Ballisodare	Ballisodare River and tributaries	125	—	—
Ballyshannon	River Erne and tributaries	700	—	—
Lee	River Lee and tributaries	600	—	—
Glenties	425,000 salmon ova distributed to hatching stations throughout the State ; remainder to Rivers Owenca and Owentocker. All sea trout supplied to Inland Fisheries Trust and fry released in Trust waters	683	28	—
Castlebar	Local rivers	—	—	500
	TOTALS	5,106	130	4,473

APPENDIX No. 24

LIST OF SCIENTIFIC AND OTHER PAPERS BY OFFICERS OF THE
FISHERIES DIVISION PUBLISHED DURING THE YEAR 1964.

MCGRATH, CHARLES J. : Development of Salmon waters—Engineering works. EIFAC Newsletter No. 2 (September, 1964).

Outline of provisions relating to Sweden's surface waters. EIFAC Newsletter No. 2 (September, 1964).

TWOMEY, EILEEN, EDWARD D. TONER and CHRISTOPHER MORIARTY : Some standing crop and population figures for Irish waters. EIFAC Newsletter No. 2 (September, 1964).

TWOMEY, EILEEN and EDWARD D. TONER : Investigation into the collapse of Salmon stocks of the River Lee. EIFAC Newsletter No. 2 (September 1964).

O'RIORDAN, C. E. : *Nephrops norvegicus*, the Dublin Bay prawn, in Irish waters. *Sci. Proc. R. Dublin Soc. Ser. A.* i. 13, pp. 131-157.

WENT, ARTHUR E. J. : Pepper's Ghost, alas a ghost no more. *Salmon and Trout Mag.* Jan. 1964.

Rare fishes taken in Irish waters in 1963. *Irish Nat. J.* xiv. 205-206.

Irish Salmon. A review of investigations up to 1963. *Sci. Proc. R. Dublin Soc. Ser. A.* i. 15, pp. 365-412.

The pursuit of salmon. *Proc. Roy. Irish Acad.* 63.C. 6.

River Foyle tagging experiments, 1963. 12 *Rep. Foyle Fish. Com. App.* IV. 42-46.

Salmon and sea trout of the River Foyle system. 12 *Rep. Foyle Fish. Com. App.* V. 47-53.

A review of the investigations on salmon of the River Foyle. *Special Pub. Foyle Fish. Com.* pp. 1-24.

WENT, ARTHUR E. J. with D. J. PIGGINS : The absence habits of some grilse kelts. *Annual Rep. Salmon Res. Trust Ire.* (1963) (1963). App. IV. 33-38.

APPENDIX No. 25

HERRING INVESTIGATIONS AT DUNMORE EAST, 1964/65

by

JOHN P. MOLLOY, B.Sc. *Assistant Inspector*

The main herring season commenced on the 20th November, 1964, and finished on the 10th February, 1965. Twenty-four Irish based boats took part in the fishery and landings were made 57 days out of a possible 68. A total of 17,434 crans of trawl caught fish were landed, a decrease of 4,578 crans or 20.8% on the figure for the 1963/64 season. Prior to the opening of the season approximately 70 crans of herrings were taken in Waterford Harbour by the sprat-weirs and drift nets. Monthly landings were as follows :—

October	**	..	7 crans
November	**	...	961 "
December		...	5,056 "
January	**	..	10,966 "
February	**	...	444 "
<hr/>			
Total	**	...	17,434 "

Three types of gear were used throughout the season : single mid-water trawls, paired mid-water trawls and bottom trawls. No boats used ring nets or purse seines during the 1964/65 season. The major portion of the catch before Christmas was taken by mid-water trawls. Landings by bottom trawls increased after the 1st of January and predominated by the end of the season. Landings per type of gear were as follows :—

Single mid-water trawls	...	3,312 crans
Paired mid-water trawls	..	2,586 "
Bottom trawls	...	11,536 "
<hr/>		
Total	**	.. 17,434 "

The shoals were first located south of the Hook in 18 to 20 fathoms. Landings from the end of November were comparatively poor when the major effort was concentrated in Tramore Bay. Herrings were also located in Waterford Harbour at this time. During most of January the shoals were located in Baginbun Bay and heavy landings were taken off the Keraghs. Early in February the fish had moved close inshore into Baginbun Bay and due to the very rough nature of the grounds, the trawlers could not work efficiently. From the 8th of February until the end of the season, the shoals were again located south of the Hook in 31 to 32 fathoms.

Samples of herrings were obtained from the 20th of November, 1964, until the end of the season in February, 1965. Samples were examined, as in previous years, for length, sex, maturity, vertebral counts, age (otolith readings) and racial type. Fish numbering 4,633 were examined in this way and the monthly age distribution obtained is shown in Table 1. The dominant age groups were found to be 2, 3, 4 and 7 year old fish. The 1960 year brood, which predominated as 3 year olds in 1963/64 again dominated the samples as 4 year olds. Recruitment of the 1961 year class also appeared to be relatively good.

The monthly maturity distribution varied slightly from that of previous years. Spent fish (numbering 100 and not included in Tables 1 and 2) found in the November and early December samples had a typical autumn spawning vertebral count of 56.49 and did not belong to the main Dunmore winter spawning component (vertebral count 56.86). The vast majority of the fish examined in November and December were developing (stage V), becoming full (Stage VI) in January. The presence of developing fish in February suggested that fishing could have extended well beyond the closing date. The mean lengths and mean vertebral counts per maturity stage per age class are summarised in Table 2.

TABLE I.—Monthly Age Distribution

AGE IN YEARS

	2	3	4	5	6	7	8	9	10	10 +	TOTAL
November ..	35	168	230	22	26	37	13	4	4	7	546
December ..	328	327	410	38	50	142	27	16	30	25	1,393
January ...	242	506	563	142	62	278	39	18	28	49	1,927
February ..	101	177	221	83	17	119	21	5	13	10	767
Nov.—Feb.	706	1,178	1,424	285	155	576	100	43	75	91	4,633
Percentage ..	15.2	25.4	30.7	6.2	3.4	12.4	2.2	0.9	1.6	2.0	100.0

TABLE 2.—Showing mean lengths and mean vetrebral counts per age class per maturity stage.

AGE IN YEARS

Maturity Stage		2	3	4	5	6	7	8	9	10	10+	TOTALS
II	No. of fish Mean length Mean V.C.	209 23.21 (56.85)	5 24.68 (56.40)	2 27.00 (56.50)								216 23.28 (56.83)
IV	No. of fish Mean length Mean V.C.	6 23.60 (56.83)	6 26.45 (57.00)									12 25.03 (56.92)
V	No. of fish Mean length Mean V.C.	186 23.44 (56.92)	514 25.79 (56.95)	662 27.53 (56.78)	100 28.91 (57.02)	68 29.46 (56.75)	208 29.54 (56.79)	46 29.85 (56.80)	20 30.20 (56.55)	33 30.22 (57.00)	37 30.57 (56.84)	1,874 27.21 (56.86)
VI	No. of fish Mean length Mean V.C.	278 23.45 (56.91)	608 25.33 (56.95)	698 27.79 (56.76)	174 29.20 (57.10)	74 29.49 (56.78)	344 29.80 (56.80)	49 30.10 (56.78)	22 30.41 (56.82)	36 30.61 (57.03)	51 30.76 (56.88)	2,334 27.27 (56.87)
VII	No. of fish Mean length Mean V.C.	27 23.83 (56.55)	45 25.30 (56.93)	62 27.58 (56.68)	11 28.72 (57.63)	13 29.54 (56.69)	24 29.71 (56.75)	5 30.02 (56.80)	1 30.90 (57.00)	6 30.82 (56.83)	3 30.63 (57.00)	197 27.22 (56.78)
TOTAL	No. of fish Mean length Mean V.C.	706 23.39 (56.88)	1,178 25.53 (56.95)	1,424 27.66 (56.77)	285 29.08 (57.08)	155 29.48 (56.76)	576 29.70 (56.78)	100 29.98 (56.79)	43 30.32 (56.70)	75 30.46 (57.00)	91 30.68 (56.87)	4,633 27.05 (56.6)

